



## Airpower as a Maneuver Force in the Theater Campaign

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**Turning the Vertical Flank**  
***Airpower as a Maneuver Force***  
***in the Theater Campaign***

**Givens**

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**COLLEGE OF AEROSPACE DOCTRINE,  
RESEARCH AND EDUCATION**

**AIR UNIVERSITY**



**Turning the Vertical Flank**  
***Airpower as a Maneuver Force***  
***in the Theater Campaign***

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## Foreword

The role of airpower in theater campaigns is a matter of heated debate among the military services and their supporters. Lt Col Robert P. Givens's *Turning the Vertical Flank: Airpower As a Maneuver Force in the Theater Campaign* addresses a question that is fundamental to that debate: to what extent can airpower function as a maneuver force in a theater campaign.

The US Air Force contends that airpower is a maneuver force and frequently turns to the 1991 Persian Gulf War for evidence in support of their position. Those critical of the Air Force's view argue that Operation Desert Storm was an aberration and charge that arguments based on that essentially unique event are suspect. Seeking to parry the charge of exceptionalism, Givens deliberately sets out to provide a more broadly grounded study that transcends the particular experience of Operation Desert Storm.

Colonel Givens begins with a general examination of warfare from ancient Greece to the American Civil War in order to determine the essential functions of a maneuver force. He then examines three distinctly different air operations in reverse chronological order: airpower employment in the 1973 Arab-Israeli War, the use of airpower in conjunction with South Vietnamese ground forces to frustrate the Communist Easter offensive of 1972, and operations against the Wehrmacht during the 1944 Normandy campaign. The evidence in all three cases suggests that airpower can function as a maneuver force. The conclusion is—if capable of serving as a maneuver force, airpower can greatly enhance the joint theater campaign both independently and in cooperation with other maneuver forces.

*Turning the Vertical Flank: Airpower As a Maneuver Force in the Theater Campaign* originally was written as a master's thesis for Air University's School of Advanced Airpower Studies. The College of Aerospace Doctrine, Research and Education (CADRE) is pleased to publish this study as a *CADRE Paper* and thereby make it available to a wider audience within the US Air Force and beyond.



JAMES R. W. TITUS  
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## **About the Author**

Lt Col Robert P. Givens (BS and MPA, Troy State University) is a senior pilot with more than three thousand hours in the T-37, T-38, A-10, and F-16. He is a 1986 graduate of the United States Air Force Academy. Upon graduation from undergraduate pilot training in 1987, Colonel Givens was assigned to fly the A-10. During Operation Desert Storm, he flew 40 combat missions and was awarded the Distinguished Flying Cross for action against Iraq. Colonel Givens was subsequently selected to attend the USAF Fighter Weapons School. After nearly 2,200 flying hours in the A-10, he was selected as the Right Wing for the USAF Air Demonstration Squadron. Colonel Givens is a 2000 graduate of Air Command and Staff College and a 2001 graduate of the School of Advanced Airpower Studies.

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## Chapter 1

### **Introduction**

*While maneuver is the key to victory, it is maneuver of the units of firepower and not of masses of cannon fodder. We must learn to depend for success, not on the physical weight of the infantry attack, but on skillful offensive used in combination of all available weapons, based on the principle of maneuver.*

—Basil H. Liddell Hart

Is airpower a maneuver force? This question has been hotly debated within the realm of military doctrine. United States Air Force (USAF) doctrine claims that airpower is a maneuver force while joint and US Army (USA) doctrine imply it is not. At the heart of the issue is how best to employ all combat forces in a theater campaign. This study contributes to the resolution of the debate by answering the following question: To what extent can airpower operate as a maneuver force in a theater campaign?

Air Force doctrine considers airpower a maneuver force. As stated in Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*, September 1997, "Air and space forces are inherently maneuver forces with unmatched organic lethal and nonlethal 'firepower.'"<sup>1</sup> The USAF believes it possesses a maneuver force capable of achieving tactical, operational, and even strategic objectives as assigned by the joint force commander (JFC).<sup>2</sup> This belief is most evident in the USAF's doctrine concerning counterland warfare. Counterland warfare is the battle against enemy surface forces, traditionally the purview of friendly ground maneuver units. Air Force doctrine claims that airpower is now a maneuver force capable of fighting the counterland battle throughout the depth of the theater.<sup>3</sup>

While not addressing the issue directly, Joint Publication (JP) 3-0, *Doctrine for Joint Operations*, 1 February 1995, seems to support both answers. It asserts, "any dimension of combat power can be dominant—and even decisive."<sup>4</sup> This assertion implies that airpower can be a force coequal to land and naval

forces and achieve objectives assigned by the JFC. The issues of maneuver and areas of operations are, however, only considered for land and naval forces.<sup>5</sup> This analysis seems to imply that only land and naval forces can execute schemes of maneuver in an area of operations and that airpower serves merely to support those endeavors. USA doctrine considers air in the counterland battle as a fire support element whose proper role is to support the ground force.<sup>6</sup> While airpower might have some independent strategic effects as a result of attacks against a nation's centers of gravity, it is relegated to a support role at the operational level.

The issue of airpower's status is more significant, however, than how competing doctrinal views cause friction on the "joint force team." Resolution of the debate is important because it sets the framework for how the United States (US) fights a theater campaign. It is necessary for the JFC to utilize all combat power to its utmost potential. Failure to use all available combat power properly can unnecessarily place lives and missions at greater risk and is contrary to the principle of economy of force, which suggests that military potential be "expended at its highest profit."<sup>7</sup> Therefore, if airpower is a maneuver force, it should be used as such.

Airpower's role in the 1991 Persian Gulf War epitomizes the debate concerning its ability to function as a maneuver force. One position tends to assert the Persian Gulf War demonstrated that airpower could function as a maneuver force. A differing view suggests that, even if true, the argument is irrelevant given the unique circumstances of the war. The Gulf War can be considered unique because of three conditions. First, the Iraqi army remained relatively static and thus was highly vulnerable to air attack. Second, the desert environment provided optimum conditions for airpower to find and kill targets. Third, the use of precision-guided munitions (PGM) was the critical element of airpower's ability to hit tactical targets. Airpower's contribution to victory in the Gulf War was a function of attacking static targets with PGMs in optimum conditions and was not due to an inherent capability to act as a maneuver force. Given the volatile nature of the argument, this study intentionally omits consideration of the Per-



sian Gulf War. Instead, it examines the 1973 Yom Kippur War, the 1972 Easter offensive, and the 1944 Normandy campaign. Each challenges a different aspect of the Gulf War's unique factors with respect to airpower. In the Yom Kippur War, Israeli airpower used PGMs against a mobile enemy in a desert environment. During the Easter offensive, American airpower employed PGMs in a jungle environment. In the Normandy campaign, Allied airpower engaged targets without the benefit of PGMs. Analysis of airpower's ability to perform maneuver force functions under these varied conditions will provide a clearer picture of its role in a theater campaign.

### **Methodology**

This study compares three historical cases to determine whether airpower can be employed as a maneuver force.<sup>8</sup> First, it develops a theoretical framework to focus the case analysis on relevant factors. That task is accomplished by surveying the key developments in Western military history from ancient Greece to the Napoleonic era and identifying the characteristics that define a maneuver force. Second, this study validates the framework by analyzing the Gettysburg campaign in terms of maneuver force characteristics to determine if they adequately explain the functions of military operations. The Gettysburg campaign took place after the Napoleonic era and before the age of aircraft and is, therefore, untainted by the presence of airpower. The campaign is well known and well documented by primary sources. Use of these sources provides a clear picture of the extent to which combat units demonstrated the maneuver force characteristics during the campaign. Third, this study examines how, if at all, airpower demonstrated maneuver force characteristics in the three twentieth-century theater campaigns previously mentioned. These cases are presented in reverse chronological order. This sequence is chosen to move backwards in time from the more familiar to the least familiar, peeling back the layers of the airpower history onion to move toward its heart.<sup>9</sup> Fourth, this study provides a comparative analysis that cuts across the cases to draw implications for employing airpower as a ma-

maneuver force in future theater campaigns. This comparison leads directly to the answer to the research question; that is, it demonstrates the extent to which airpower can function as a maneuver force. Fifth, this study then considers the future role of airpower and assesses the extent to which it can perform maneuver functions in joint operations.

### **Clarifications**

When reading this study, it is essential to understand three points. First, maneuver force and maneuver warfare are not the same. A maneuver force is an object capable of various combat actions in both maneuver and attrition styles of warfare. Second, this study focuses almost exclusively on the operational level of war; events at the tactical level are addressed only as required to make the operational level intelligible. Third, and most important, the conclusions reached here are not meant to imply that air forces may or may not be used as a substitute for ground forces. In each case airpower operated in cooperation with other assets, from regular ground forces to resistance movements. Nevertheless, this study seeks to isolate airpower capability and thereby addresses the degree to which it can be used to perform operations in pursuit of theater-level operational tasks. Such conceptualization is required for getting the most out of whatever force happens to be available.

As the United States considers its options for simultaneously conducting warfare in different locations, it must address the problem of limited forces. In addition, should the United States be presented with a peer competitor with superior numbers, it will be essential for the deployed force to make optimum use of its combat power. If airpower is conceptualized as a maneuver force, it may have greater potential to change the balance of forces than has been previously realized. Alternately, if it cannot be used as a maneuver force, it is essential for the JFC to be aware of this limitation. The answer to the research question thus obviously has significant implications for national defense.

### Notes

1. Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*, September 1997, 37.
2. Ibid., 43.
3. AFDD 2-1.3, *Counterland*, 27 August 1999, 7-8.
4. Joint Publication (JP) 3-0, *Doctrine for Joint Operations*, 1 February 1995, III-10.
5. Ibid., II-19.
6. Field Manual (FM) 110-5, *Operations*, June 1993.
7. This study uses the principle of economy of force as defined by J. F. C. Fuller in *The Foundations of the Science of War* (London: Hutchinson & Co., 1926), 201.
8. For a complete discussion of the focused comparison see Alexander George's essay, "Case Studies and Theory Development: The Method of Structured, Focused Comparison," in *Diplomacy*, ed. Paul G. Lauren (New York: Free Press, 1979), 43-68.
9. World War I examples of airpower were not considered due to the immaturity of the existing technology.

## Chapter 2

### **Functions of a Maneuver Force**

*Battles are won by fire and by movement. The purpose of the movement is to get the fire in a more advantageous place on the enemy. This is from the rear or flank.*

—Gen George S. Patton Jr.

What is a *maneuver force*? The term is often used but much less frequently defined. Indeed, a definition may be unnecessary. Instead of discussing what a maneuver force is, perhaps it is more important to understand what it does. The object is then defined by its function. To derive the functions of a maneuver force, one must look at how units have operated in the past. This study examines military operations from the ancient Greeks to Napoleonic France. This period is the bedrock for modern maneuver forces. The Greeks provide the foundation stone for Western military traditions.<sup>1</sup> The Napoleonic period is the capstone because of its enduring legacy; all the basic functions of modern operational-level maneuver can be seen in the Napoleonic period.<sup>2</sup> When one surveys the changes in warfare from the Greeks to Napoléon Bonaparte, it becomes evident that maneuver force attributes have developed in a cumulative fashion.

### **Ancient Greece—Shock Action through Direct Contact**

Battle in ancient Greece was normally a limited affair that produced limited results. This reason was largely due to the local terrain and the social structure of this agrarian civilization. The mountainous terrain limited the ability of forces to maneuver against each other. Flanks could be secured by high ground that was impassable to organized formations.<sup>3</sup> The social structure of Greece was based on the city-state. Military service was limited with few examples of permanent standing

forces. With the exception of Sparta, most Greek "armies" were groups of amateurs who trained occasionally and only took the field for the campaigning season.<sup>4</sup> The agrarian nature of ancient Greece furthered these limitations in two ways. First, the campaigning season was limited due to the need to harvest crops at home. Second, the vineyards and olive groves were very difficult to destroy and, therefore, offered little opportunity for armies to inflict major costs on an enemy's economic base.<sup>5</sup>

The product of the Greek military environment was the phalanx, which was the basic unit needed to conduct short, sharp engagements. The individual soldier, known as the hoplite, stood shoulder to shoulder with fellow townsmen in a rectangular formation with a spear leveled against the enemy. The width and depth of the formation depended on its composition. Veteran units often did not have the depth of newer units because these men did not require the psychological support afforded by the mass of warriors behind them.<sup>6</sup> With very few exceptions, these units acted as a single body in combat with no subdivisions.

Greek commanders normally employed their phalanx in direct shock action. By consent, two groups would form opposite each other and advance into contact. There was little opportunity to move to a position of advantage. Each group would simply charge into the enemy. Flanks were exposed and exploited only when a phalanx overlapped the opposing formation. Greek warriors did not use their large spears as missile weapons but as thrusting devices designed to break open the opposition. Men in the rear ranks pushed those in front, pressing a wall of shields against the enemy. As hoplites in the first ranks fell, replacements stepped forward. Ultimately, the purpose of such an engagement was to rout the enemy and win the field. Yet, given the nature of the phalangeal formation, pursuit of a fleeing foe was difficult. To put it simply, hoplites who had discarded their spears, shields, and helmets in an effort to escape could run faster than hoplites still in the ranks.<sup>7</sup> The phalanx can be considered the first maneuver force. Therefore, the way it was typically employed illustrates the first functions of a maneuver force—contact with an

enemy and direct shock action. These functions still constitute basic roles of a maneuver force.

### **Rome—A Maneuver Force Exerts a Zone of Influence over the Enemy**

The Roman way of war differed from that of the Greeks in a multitude of ways. Roman territorial ambitions forced them to consider how to best occupy areas for long periods of time. This method required them to have a campaign-level outlook in their view of war because they needed to station combat forces in permanent garrisons throughout occupied territory. This change in perspective led to another difference—permanent garrisons required a professional, standing military. All of this produced a more sophisticated approach to war, enabling Roman armies to move rapidly, conquer, and hold ground.

The maneuver unit the Romans developed to wage their way of war was known as the legion, which like the Greek phalanx, was an infantry force. The legion, however, had the benefit of being subdivided into smaller groups, each with an appropriate command structure. This division helped to instill in the Roman army a spirit of teamwork and command and control (C<sup>2</sup>) that served it well on campaign when cooperation among garrison units was required.<sup>8</sup> In a sense, the legion was the forefather of the regimental system. Each legion contained approximately six thousand men and was divided into cohorts and centuries. A standard cohort contained 480 legionnaires grouped into six centuries of 80.<sup>9</sup> This organization made the Roman army flexible in ways the Greek phalanx was not. On a tactical level, the smaller units were able to demonstrate initiative and exploit opportunities to solve crises as they appeared. On a campaign level, the Roman army was capable of conducting independent and coordinated operations across its span of control.

Tactically, Roman commanders employed their legions in the same manner as the Greeks had employed the phalanx. Infantry forces and their auxiliaries closed to contact with the enemy and engaged them with direct combat. Commanders

attempted to maneuver in ways designed to engage the adversary with direct action in a place of disadvantage. But Greek and Roman maneuver forces differed significantly at the campaign level where the legion was an outstanding tool for controlling territory.<sup>10</sup> Used in conjunction with political influence, the legions served as bastions of Rome throughout the conquered regions. The legion normally held positions that watched over trade routes. While the Romans constructed fortified positions, the legion was not seen as a static defense force. Rather, the Romans preferred to employ their legions in mobile strike operations against either rebelling populations or invading tribes.<sup>11</sup> Consequently, any force entering a Roman territory had to maneuver in relation to the legion(s) stationed in the region.

The characteristic that emerges when one examines the Roman legions is the zone of influence that they imposed. A zone of influence is the ability to deny freedom of movement, enabling a military force to control terrain directly or by its capability to act. The legion exerted a zone of influence over enemy units and the surrounding terrain, denying freedom of movement to potential adversaries. At any point within a distance of one-day's march from a legion, an enemy of Rome had to be prepared for battle. Populations and enemies were deterred from rebellion by the assumption that the legion could quickly march on them and, therefore, accepted Roman control.

A review of Greek and Roman warfare reveals two main maneuver force functions. The Greeks demonstrated direct shock action. The Roman legions added the zone of influence. These two maneuver force functions are complementary. The Romans used the threat of direct shock action to impose a zone of influence throughout their empire. This pattern continued with the coming of the neoclassical period.

### **Neoclassical Period—A Maneuver Force Compels or Denies Battle**

To continue deriving maneuver force characteristics, it is necessary to advance nearly fifteen hundred years to what is known as the neoclassical period of warfare. The period from

the midseventeenth to the mideighteenth century is important for the development of maneuver on a campaign level.<sup>12</sup> Warfare in the neoclassical period was the limited affair of kings. Since it was considered poor form to remove a king, given the bad precedent it would set, the field army was the most acceptable target.<sup>13</sup> The main object of the campaign was to defeat the enemy army, as that represented the enemy king and his greatest manifestation of power. The army was not necessarily an accessible target. Armies tended to be limited in their mobility; therefore, as in ancient Greece, they joined in battle almost exclusively by mutual consent. Lack of mobility significantly influenced campaign design. First, extensive actions were needed to prepare for any operation. Depots of supplies had to be created along the projected route of march.<sup>14</sup> Second, the campaigning season was limited. There were only a few months of weather that permitted the type of maneuver required to bring an enemy to battle. The situation called for a force that could outmaneuver its opponents and periodically bring them to battle.

This age of war saw the beginning of true combined arms with professional infantry and cavalry forces attempting to gain a mobility that would overcome an opponent who did not consent to battle. Armies of this period employed a significant amount of cavalry that often operated as an independent maneuver force. Although the percentage of cavalry declined during the period from 1650 to 1750, its significance continued.<sup>15</sup> Infantry and cavalry forces were subdivided into regiments. The individual regiments were further broken down allowing flexibility in training, maneuver, and operation.

Opposing forces maneuvered in relation to each other hoping to compel or deny battle depending on the tactical and strategic situation. The goal was to use a successful combination of cavalry and infantry either to pin or to fend off an opponent. Armies used this method of combined arms both tactically and operationally.

Tactical mobility on the battlefield produced flanking maneuvers and attacks against an enemy that was not yet prepared to receive an assault. Fast marching, well-disciplined infantry could operate against an enemy's flank before the



enemy could react, thereby causing unfavorable fighting conditions. Cavalry possessed superior mobility and could rapidly change the tactical situation by attacking a shaken enemy or relieving hard-pressed infantry.<sup>16</sup> The Prussian army demonstrated this type of employment in 1757 against the Austrians at the Battle of Leuthen. A Prussian oblique march threatened the Austrians' flank, forcing their new battle line to redeploy. Before the new Austrian line could form, Prussian cavalry charged and disrupted the massing infantry. The results were disastrous for the Austrians.<sup>17</sup> The key to the Prussians' victory on the battlefield was the ability to move faster than their opponents against a flank and compel the enemy to fight a tactical battle for which they were unprepared.<sup>18</sup>

On the campaign level, mobility forced or denied battle. Commanders used cavalry's superior mobility to trap an opponent and force him to accept battle in unfavorable circumstances. The speed and ability of the mounted arm to fight almost directly from a travel formation allowed it to bring an enemy under a zone of influence quickly and compel him to fight.<sup>19</sup> Conversely, cavalry could prevent enemy movement and, thus, deny battle. Cavalry often operated as a screening or covering force, which kept distance between the opposing armies until more favorable conditions presented themselves.<sup>20</sup> Infantry mobility also played a significant role. While cavalry could pin an enemy, it was not necessarily effective against a well-disciplined infantry formation. Therefore, to have a real combined arms effort, infantry had to be able to march quickly and capitalize on the situation presented by the cavalry. This was indeed one of the keys to Prussian success in the time of Frederick the Great. Frederick was a master at stealing a march and arriving with his army at a time that forced the enemy to accept battle.<sup>21</sup> On the operational level, Frederick knew that in order to gain conditions that forced the enemy into battle or to deny them the same opportunity, the army had to make rapid marches.<sup>22</sup>

The maneuver force characteristic that can be derived from neoclassical warfare is thus the ability to compel or deny battle. If one side desires battle, it maneuvers its most mobile formations against an enemy to bring the enemy under a zone

of influence and to deny freedom of movement. The side wishing to deny battle will use a mobile force to screen its movement so as to remain out of an enemy's zone of influence. This characteristic is fundamental for an army that seeks to obtain or avoid decisive engagement. If the enemy cannot be brought to battle, it cannot be engaged decisively. It is also important to realize that a key element of this characteristic is the effect of combined arms. An army comprised of maneuver forces of different arms has a much greater ability to exploit its inherent strengths to compel or deny battle.

By the end of the neoclassical period, maneuver forces had three main performance characteristics. Like the phalanx, armies of the period closed directly with the enemy. Armies also used a zone of influence to control territory similar to the Roman legion. The addition of large cavalry units now gave armies a better chance to compel or deny battle. All of these functions were used to their maximum potential by a master of war who sprang forth out of revolutionary France.

### **Napoleonic Era—A Maneuver Force Gains and Exploits a Position of Advantage**

The French Revolution and the rise of Napoléon Bonaparte transformed the neoclassical era of warfare. Napoléon seemed to perfect the military campaign. The infrastructure of Europe had not changed fundamentally from the time of Frederick, but the aim of combat had. The age of limited engagement was over, and generals now fought wars with deadly intent. Conquest, occupation, and dethronement were the order of the day. The revolutionary spirit of post-Bourbon France was a threat to the great monarchies of the ancient regime. The social change in France brought a true sense of nationalism that saw an end to mercenary armies of the eighteenth century and the beginning of mass armies of citizen-soldiers. Underpinning these mass armies was a bedrock of nationalism that supported the effort to defeat an enemy nation and not just its army. It was the perfect environment for decisive campaigns designed to bring an opponent to its knees. There remained a necessity for quick decisions. The campaigning season was still limited; destruction of the opposing

army was considered to be the "quickest, shortest, sharpest" way to defeat the enemy nation.<sup>23</sup>

Napoléon developed the *corps d'armée* to deliver decisive victory. The French *corps d'armée* system was designed to create "mini" armies capable of semi-independent operations. It was a combined arms force comprised of infantry, cavalry, and artillery. This force was expected to fight on its own for a limited period until the main force arrived or in cooperation with other corps once the army had reassembled. Each corps contained 25,000 to 30,000 soldiers. This unit was further divided into divisions that were also capable of independent operations for very brief periods of time. Napoléon expressed his belief in the corps system as follows: "Here is the general principle of war—a corps of 25,000–30,000 men can be left on its own. Well handled, it can fight or alternatively avoid action, and maneuver according to circumstances without any harm coming to it, because an opponent cannot force it to accept an engagement but if it chooses to do so it can fight alone for a long time."<sup>24</sup> The corps system Napoléon developed became the standard for armies of his day as well as those of modern times.

Napoléon's corps allowed for a significant change in employment at the campaign level. Instead of one threat to maneuver against, an enemy now had several because each dispersed corps represented its own danger. The emperor of the French would spread his corps out as if casting a net to catch an opposing force. This maneuver increased both mobility and sustainability because the army could now use multiple avenues of approach and wide-foraging areas. The army would march in a divided fashion with each corps within a specified march radius. This gave the French army the flexibility required to adapt quickly and exploit any advantageous situation that presented itself. It also ensured that the army could meet any unexpected challenges in a rapid fashion.<sup>25</sup> The key to this type of warfare was that the dispersed corps were marching toward an objective. Every march had a target. The distance between the corps would narrow as the army neared the enemy. All movement was made under the utmost secrecy. Once the veil was torn, multiple corps would rapidly reassemble and engage the enemy before he was properly arrayed for battle.<sup>26</sup> This campaign-level employment

was called *manoeuvre sur les derrieres* and was designed to march into an enemy's rear and force him to flee or fight at a disadvantage.

The maneuver force characteristic of this Napoleonic style of warfare is similar to compelling or denying battle. The key difference is that Napoléon's corps were designed to gain a position of advantage and compel battle under conditions that were unfavorable to an enemy on an operational as well as a tactical level. The Napoleonic maneuver force was able to gain and exploit a position of advantage over an adversary causing him to react or suffer attack at a disadvantage. An advantageous position was usually a geographic location such as the rear of an enemy army or a position between opposing forces. From there, an army could exploit its position by attacking or continuing to maneuver in the enemy's rear. While attacking in such circumstances was usually unfavorable to the enemy, exploiting the position might also include destroying lines of communications (LOC) and supply or pillaging the enemy homeland.

The Battle of Ulm offers a classic example of this campaign-level maneuver force characteristic. In 1805 Napoléon set out to destroy the Austrian army and force a peace. Napoléon secretly marched his dispersed army and was able to gain a position of advantage by maneuvering behind the Austrian army. Through a series of exploitations by his corps commanders, Napoléon was able to trap a significant Austrian force in the city of Ulm. Ultimately, the French positional advantage compelled Austrian General Mack to capitulate.<sup>27</sup>

### **Maneuver Force Performance Characteristics**

The foregoing survey suggests that maneuver forces exhibit a set of common attributes that have evolved over two thousand years of military history. A maneuver force

- comes into direct contact with an enemy and shocks it;
- exerts influence over enemy units and terrain;
- denies or compels battle; and
- gains and exploits a position of advantage, forcing the adversary to react or be attacked at a disadvantage.

Different environments caused armies to adapt and add to the tactical foundation the Greek phalanx provided. In reality, the essence of a maneuver force is the combination of all characteristics described above. A maneuver force gains a position of advantage against an adversary forcing him to react or suffer attack. To compel battle, a commander must deny the opponent freedom of movement and bring the opponent under a zone of influence. Once that is achieved, the commander can make contact and engage the enemy with direct fire or shock action. If the Napoleonic period is truly the beginning of modern warfare, the four characteristics of a campaign-level maneuver force should be evident in a post-Napoleonic campaign. The American Civil War provides just such an example.

### **Gettysburg Campaign**

Gettysburg is one of the most famous campaigns of the American Civil War. The campaign is also a classic representation of maneuver forces at the theater level. In June 1863, two great armies watched each other across the banks of the Rappahannock River near Fredericksburg, Virginia. The Union Army of the Potomac, commanded by Maj Gen Joseph Hooker, had just suffered a stinging defeat at the Battle of Chancellorsville. Though defeated, it remained an effective fighting force as it regrouped on the north bank of the Rappahannock. The victorious Confederate Army of Northern Virginia could not rest long on its laurels. The Confederate commander, Gen Robert E. Lee, knew that time was not on his side. Both armies had previously traversed this territory and picked it clean of forage. Now, after two years of conflict, the Confederates were beginning to run short of supplies. General Lee needed to get at the Union forces and achieve a decisive victory. At the very least, he needed to move the theater of war to an area that would allow for foraging at northern rather than southern expense. To accomplish this task, Lee conceived a plan to invade the north. His objective was to gain desperately needed supplies; draw the federal army out of its position; and, if possible, make a countermove that would give him a "fair opportunity to strike a blow."<sup>28</sup> The campaign that followed can be

divided into three phases—disengagement, maneuver, and contact—culminating in a climactic battle at Gettysburg. Throughout the different phases of the campaign, both armies exhibited the four characteristics seen in maneuver forces since the time of ancient Greece.

At the campaign level, the opposing armies used their corps as maneuver forces. The Confederate army was comprised of three infantry and one cavalry corps. Each corps was considered a maneuver unit capable of moving, operating, and achieving objectives fairly independently. The Union army was also organized with a corps system, though its corps were significantly smaller. In this campaign, the Army of the Potomac consisted of seven infantry and one cavalry corps.<sup>29</sup> Both sides used their cavalry to screen and deny battle as well as to reconnoiter and compel battle. Moreover, these units operated both autonomously and in cooperation with traditional infantry. The corps were the maneuver forces for both the northern and southern armies, and they demonstrated the essential maneuver force characteristics in the three phases leading to the clash at Gettysburg.

### **Disengagement**

Disengaging from the Army of the Potomac presented a significant problem to the Confederate force. Lee realized that he was locked into the Union's zone of influence. To gain freedom of maneuver, it was essential that he keep Union forces in place long enough to slip away. This decision also entailed positioning his army so it could pounce on the Union troops if they moved aggressively to the south. This period was fraught with danger. If Hooker caught Lee in his redeployment or moved rapidly across the Rappahannock before he was able to engage, his force would be at a severe disadvantage.

The first part of Lee's disengagement required him to convince the Union army that it was still under the Confederate zone of influence and, at the same time, deny it battle. For the initial portion of the movement, Lee ordered Lt Gen A. P. Hill's III Corps to "make such dispositions as will be best calculated to deceive the enemy and keep him in ignorance of any change in the disposition of the army."<sup>30</sup> In this order he intended to

establish a fixing force and eventually a cavalry screen that would let him slip away from the Union army.<sup>31</sup> When his main force was away, Lee intended to create an "army in effigy" that would keep Hooker in place and threaten Washington. He would accomplish this by deception and by concentrating all available Confederate troops in the Virginia area not directly assigned to the Army of Northern Virginia.<sup>32</sup>

The Confederate movement out of the Union zone of influence began on 3 June 1863. Lee moved cautiously, watching for any sign that the Union forces had discovered his plan. One of his main concerns was for the safety of Richmond, Virginia. If Hooker moved aggressively in his direction, Lee would have to remain in the Union's zone of influence.<sup>33</sup> Meanwhile, on the opposite side of the Rappahannock, the Army of the Potomac began to suspect Confederate movement. On 4 and 5 June reports started to come in providing evidence that the South was repositioning.<sup>34</sup> Hooker sent a message to President Abraham Lincoln stating that the rebels were moving north and were attempting to disengage from the Union forces. He felt it was his duty to "pitch into [the rebel] rear."<sup>35</sup> Hooker intended to use his maneuver forces to gain a zone of influence and compel battle.

Lee now faced the possibility of a Union push across the Rappahannock. The Union began to make demonstrations and probes in the vicinity of Fredericksburg. This concerned Lee greatly, and he sent orders to stop the Confederate movement while he pondered Hooker's intentions. Lee realized he must deny battle to complete his army's movement to the north. Still concerned about the Union demonstrations, Lee began exploring the enemy positions with General Hill's corps on 9 June. Lee was prepared to use these forces to offer a quick, small engagement in an effort to avoid a larger one. As it turned out, Hooker was not moving south after all; and Lee continued with his planned operation.<sup>36</sup>

What Lee did not know was that President Lincoln had directed the Army of the Potomac not to proceed south of the Rappahannock. Lincoln was concerned that the Confederates would have Hooker at a disadvantage if he began to move without completely knowing their intentions.<sup>37</sup> Acting on Lin-

coln's behalf, general in chief of the Army Maj Gen Henry Halleck suggested that any movement of the Union army must depend on the movement made by General Lee.<sup>38</sup> Hooker decided to remain on the north bank and assess the situation. It did not take long for him to receive information that prompted him to act. Hooker learned that a large portion of the Confederate cavalry was to his northwest in the vicinity of Culpeper County, Virginia. In a report to Halleck, he stated "as the accumulation of the heavy rebel force of cavalry about Culpeper may mean mischief, I am determined, if practicable, to break it up in its incipency."<sup>39</sup> Hooker ordered his cavalry corps to proceed to Culpeper to undertake the task. He was intent on using his cavalry maneuver arm to bring the Confederates back into his zone of influence.

The Army of the Potomac might have succeeded in this task were it not for the actions of the Confederate cavalry. Lee used cavalry to screen his force as it moved farther to the north and west. Hooker sent his cavalry forces with limited infantry support to the suspected rebel position at Brandy Station. The arrival of Union cavalry actually surprised the Confederates, but the dashing Confederate cavalry commander, Maj Gen J. E. B. Stuart, was quick to respond. The two forces fought to a standoff. With the arrival of Confederate infantry, the Union forces did not have the strength necessary to continue the engagement and were forced to withdraw. Had Hooker sent a larger force, it is conceivable he would have achieved his objective of compelling battle, or at least maintained contact with Lee.<sup>40</sup> The cavalry screen established by Lee, however, met its objective and denied battle to the Army of the Potomac. By 13 June, Lee was free from the Union forces.<sup>41</sup> As he accurately observed, "We have again outmaneuvered the enemy who even now does not know where we are or what our designs are."<sup>42</sup> The Army of Northern Virginia had successfully denied battle and broken free of the Army of the Potomac's zone of influence.

### **Maneuver**

After the engagement at Brandy Station, the two armies entered the maneuver phase of the campaign. The Confederates continued implementing their plan, while the Union forces at-



tempted to divine the rebel intentions. Hooker was concerned that Lee would gain and exploit a position of advantage against either the Army of the Potomac or the Union infrastructure at Washington or Baltimore. Indeed, that was Lee's intention. Lee was moving the Army of Northern Virginia through the Shenandoah Valley, shielding his eastern flank with cavalry and mountains. Lee understood that to reach the north he would need to keep the Union army at bay until he was safely across the Potomac. Once across, he could feed his troops on the abundance of a countryside that had not yet seen the war and attack the Army of the Potomac when the opportunity presented itself.<sup>43</sup>

Lee's movements caused Hooker concern. In fact, the entire senior Union leadership understood the danger presented by the free-roaming Army of Northern Virginia. Lincoln wished to compel the Confederates to give battle, especially if they were moving north toward the Potomac. In a letter to Hooker, Lincoln urged, "if he comes toward the Upper Potomac, follow on his flank . . . Fight him, too, when opportunity offers. If he stays where he is, fret him and fret him."<sup>44</sup> As the campaign progressed and the Confederates gobbled up Union garrisons in the Shenandoah Valley, Lincoln pressed his field commander to find a weak spot in the strung-out Confederate column and break it.<sup>45</sup> The task, however, was not so easy. Before Hooker could break Lee's column, he had to know where it was. Lee was skillfully using his cavalry and terrain to maintain his advantageous position. Hooker's frustration was evident in a report to the president. "We can never discover the whereabouts of the enemy, or divine his intentions, so long as he fills the country with a cloud of cavalry. We must break through that to find him."<sup>46</sup> The frustration was also evident in Washington. Halleck pointedly directed Hooker to maintain contact. Halleck asserted, "unless your army is kept near enough to the enemy to ascertain his movements, yours must be in the dark or on mere conjecture."<sup>47</sup>

Hooker and the Army of the Potomac failed. The Confederate cavalry was able to cover its army and deny battle. General Lee explained this to President Jefferson Davis in a letter that read, "[Union] attempts to penetrate the mountains have been successfully repelled by General Stuart with the cavalry."<sup>48</sup> Lee

properly used his screening forces to deny battle and, therefore, was able to continue his operations. With Lee poised to enter Maryland and Pennsylvania, Hooker resigned from his post. President Lincoln ordered Maj Gen George G. Meade to take command of the Army of the Potomac and directed him to make contact with the Army of Northern Virginia.

### **Contact**

By the time General Meade took command, Lee was across the Potomac in force and was spreading panic throughout the north. Washington received reports of large Confederate forces foraging throughout Pennsylvania. Discussions between Halleck and Meade on 28 June 1863 resulted in the decision to move Union forces north to cover Washington and Baltimore.<sup>49</sup> The northerners were faced with the task of denying Lee a position of advantage and compelling him to give battle. The two armies were entering the contact phase of the campaign. Neither army had a clear idea where the other one was. The Confederates were scattered all over Pennsylvania exploiting their opportunity to forage through "virgin" territory. Wild reports filtered into the Union camp. The Confederates continued to march north. But the Union army was finally on the same side of the Potomac, and Union cavalry was beginning to do a respectable job of screening.<sup>50</sup> As a result, the southerners were as blind as the northerners as they moved into the fertile Pennsylvania countryside.

On 28 June, General Lee became aware that the Union army was across the Potomac and would soon gain a position of advantage threatening his LOC.<sup>51</sup> Lee realized that both armies had stumbled into each other's zone of influence, and it would be impractical to disengage. Therefore, Lee ordered the Army of Northern Virginia to concentrate near the town of Gettysburg.<sup>52</sup> By 30 June, Lee believed the climactic battle of the campaign was coming and would be in the vicinity of either Gettysburg or Chambersburg.<sup>53</sup> By the morning of 1 July, both armies were fairly extended from their supply bases. As neither could safely withdraw, engagement was inevitable.<sup>54</sup> Both armies were surprised by the other's appearance, but the Confederates had the initial advantage. On the eve of 1 July,

Lee began concentrating his army. Meade's force was still strung out on the march.<sup>55</sup>

The two armies came into direct contact on 1 July 1863, almost by accident. Advance elements of Lee's infantry engaged Meade's cavalry screen on the western edge of Gettysburg.<sup>56</sup> Meade was aware that the Confederate army now exerted a zone of influence over his forces. In a report to Halleck he stated, "The enemy are advancing in force on Gettysburg, and I expect the battle will begin today."<sup>57</sup> The small engagement started in the morning by advance forces became a general conflict by midafternoon. The Confederates were approaching from the north and west while the Union forces were coming primarily from the south. There was no doubt that the opposing maneuver forces were "tied" to each other. Meade fired off a report to Halleck that stated, "I see no other course than to hazard a general battle."<sup>58</sup> The stage was set for two more days of battle that would turn the tide of war against the Confederacy. During the night of 1 July, each commander deliberated with his staff on what they should do the next day. Lee stated, "If the enemy is there tomorrow, we must attack him."<sup>59</sup> Meade concluded it was a little too late to leave.<sup>60</sup> The time had come for both forces to engage each other in direct fire and shock action.

The armies that battled at Gettysburg demonstrated each of the four maneuver force characteristics this study derived from previous history. Each army struggled to gain and exploit a position of advantage over the other. Each was forced to react to the other's maneuvers and attempted to compel or deny battle at various times. Northern and southern armies alike were also forced to deal with each other's zone of influence. Finally, the two opposing forces ultimately maneuvered into contact and engaged the enemy with direct shock action.

### **Summary**

A review of maneuver forces in theater campaigns showed that they exhibit four distinct characteristics. The Greek phalanx demonstrated that the first function of a maneuver force was to close to contact with the enemy and directly shock him.

The Roman legion added the characteristic of the zone of influence. In neoclassical warfare, mobility gave maneuver forces the ability to compel or deny battle. Napoléon Bonaparte expanded on these characteristics by creating a campaign force capable of gaining and exploiting a position of advantage, thus forcing an enemy to react or suffer attack at a disadvantage. The Army of the Potomac and the Army of Northern Virginia exhibited all four of these characteristics in their maneuvers during the Gettysburg campaign.

### Notes

1. Victor Hanson, *The Western Way of War* (New York: Oxford University Press, 1989). The ancient Greek way of war is thought to be the foundation for the Western way of war. Hanson provides a complete discussion on the topic.

2. The span of history used for the derivation incorporates various types of warfare, including nonmaneuver warfare periods such as classical Greece. A key point to understand is that a maneuver force is not necessarily associated with maneuver warfare. A maneuver force can fight battles of attrition, annihilation, and maneuver depending on the situation.

3. Archer Jones, *The Art of War in the Western World* (Urbana, Ill.: University of Illinois, 1987), 3.

4. W. Kendrick Pritchett, *The Greek State at War*, vol. 4 (Berkeley Calif.: University of California Press, 1985), 63–64.

5. Hanson, 33.

6. Jones, 2–3.

7. Richard A. Preston, Alex Roland, and S. F. Wise, *Men in Arms: A History of Warfare and Its Interrelationship with Western Society*, 5th ed. (Fort Worth, Tex.: Holt, Rinehart and Winston, 1991), 16.

8. *Ibid.*, 36–37.

9. Edward N. Luttwak, *The Grand Strategy of the Roman Empire: From the First Century A.D. to the Third* (Baltimore, Md.: Johns Hopkins University Press, 1976), 14–18.

10. Jones, 84.

11. Luttwak, 18. Luttwak is a useful source for understanding the Roman strategy for the control of territory. The actual employment of the legions evolved over time but had the same principle as a mobile strike force. It exerted a zone of influence in its region and was capable of cooperation with other units.

12. While certainly there were many changes to warfare covering the 1,500 years mentioned, none was so significant as to add to maneuver force characteristics. The coming of cavalry as an operational-level force to be used in combined arms fashion with mobile infantry is what separates the neoclassical period from the events after the Romans.

13. Jones, 12.

14. David G. Chandler, *The Art of Warfare in the Age of Marlborough* (New York: Sarpedon, 1997), 16.

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15. Ibid., 30.
16. Hew Strachan, *European Armies and the Conduct of War* (Boston; London: Allen & Unwin, 1983), 18.
17. Jones, 300.
18. Hans Delbrück, *The Dawn of Modern Warfare*, vol. 4, *History of the Art of War*, trans. Walter J. Renfroe Jr. (Lincoln, Nebr.: University of Nebraska Press, 1990), 279.
19. Jones, 263.
20. Brent Nosworthy, *The Anatomy of Victory: Battle Tactics, 1690-1763* (New York: Hippocrene Books, 1989), 287.
21. Delbrück, 303.
22. Ibid., 309.
23. David G. Chandler, *The Campaigns of Napoleon* (New York: Macmillan, 1966), 141.
24. Ibid., 154.
25. Ibid., 151.
26. Ibid., 147.
27. Chandler, *The Campaigns of Napoleon*, 400.
28. Edwin B. Coddington, *The Gettysburg Campaign* (New York: Touchstone, 1997), 8-9.
29. Albert A. Nofi, *The Gettysburg Campaign, June-July 1863*, 3d ed. (Conshohocken, Pa.: Combined Books, 1986), 236-53. Order of battle for the Army of the Potomac and the Army of Northern Virginia.
30. *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies* (Washington, D.C.: Government Printing Office, 1880-1901) series 1, vol. 27, pt. 3 (Washington, D.C., 1889), 859. Lee's orders to A. P. Hill, 5 June 1863.
31. Nofi, 22.
32. Glenn Tucker, *High Tide at Gettysburg: The Campaign in Pennsylvania* (Dayton, Ohio: Morningside Bookshop Press, 1983), 37.
33. Coddington, 51-52.
34. *The War of the Rebellion*, vol. 27, pt. 1, 29-30.
35. Ibid., 30. Hooker's report to Lincoln, 5 June 1863 at 11:30 A.M.
36. *The War of the Rebellion*, vol. 27, pt. 2, 293-94.
37. *The War of the Rebellion*, vol. 27, pt. 1, 31. Lincoln's letter to Hooker, 5 June 1863, 4:00 P.M.
38. Ibid., vol. 27, pt. 1, 31-32. Halleck's letter to Hooker, 5 June 1863, 4:40 P.M.
39. Ibid., vol. 27, pt. 1, 33. Hooker's letter to Halleck, 6 June 1863, 3:00 P.M.
40. Coddington, 55-57.
41. *The War of the Rebellion*, vol. 27, pt. 2, 293-94.
42. Tucker, 24.
43. *The War of the Rebellion*, vol. 27, pt. 2, 313.
44. *The War of the Rebellion*, vol. 27, pt. 1, 35. Lincoln's letter to Hooker, 10 June 1863, 6:40 P.M.
45. Ibid., 39. Lincoln's letter to Hooker, 14 June 1863, 5:50 P.M.
46. Ibid., 45. Hooker's report to Lincoln, 16 June 1863, 11:00 A.M.
47. Ibid. Halleck's letter to Hooker, 16 June 1863, 11:30 A.M.
48. *The War of the Rebellion*, vol. 27, pt. 2, 297. Lee's report to Davis, 23 June 1863.

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49. *The War of the Rebellion*, vol. 27, pt. 1, 61-62.
50. Coddington, 196.
51. *Ibid.*, 180.
52. *Ibid.*, 181-82.
53. *Ibid.*, 197.
54. *Ibid.*, 242.
55. *Ibid.*, 207.
56. *Ibid.*, 260.
57. *The War of the Rebellion*, vol., 27, pt. 1. Meade's report to Halleck, 1 July 1863, 1:00 P.M.
58. *Ibid.*, 71-72. Meade's report to Halleck, 1 July 1863, 6:00 P.M.
59. Coddington, 361.
60. *Ibid.*, 323.



## Chapter 3

### **1973 Yom Kippur War**

*The Air Force, working 'round the clock, took over the role of the foot soldier.*

—Israeli Defense Force Video  
History of the Yom Kippur War

The first case this study examines is the use of airpower in the 1973 Yom Kippur War between Israel and the Arab coalition of Egypt and Syria. While the Yom Kippur War resembles the environmental conditions of the 1991 Persian Gulf War, its operational context is different. In this war, airpower was used against an attacking mechanized force. This chapter examines airpower's ability to perform maneuver functions against a mobile force by focusing on the Israeli use of airpower as a maneuver force to stop and reverse an invasion of their territory in both the Sinai and the Golan. In the initial stages of the campaign, the Israeli Defense Force (IDF) used airpower to delay the invading Arab armies while it mobilized its ground forces. When the situation had stabilized, the Israelis used airpower in cooperation with land forces to counterattack and reverse the adverse military situation.

Three issues in this campaign are significant to the central question of this study. First, the Israeli Air Force (IAF) exerted a zone of influence over the Arab armies even before the war began. Second, the Israelis planned to gain and exploit a position of advantage over the enemy by turning the vertical flank. Third, despite the hazards, the Israelis used their air force to close with their enemies and engage them with direct fire.

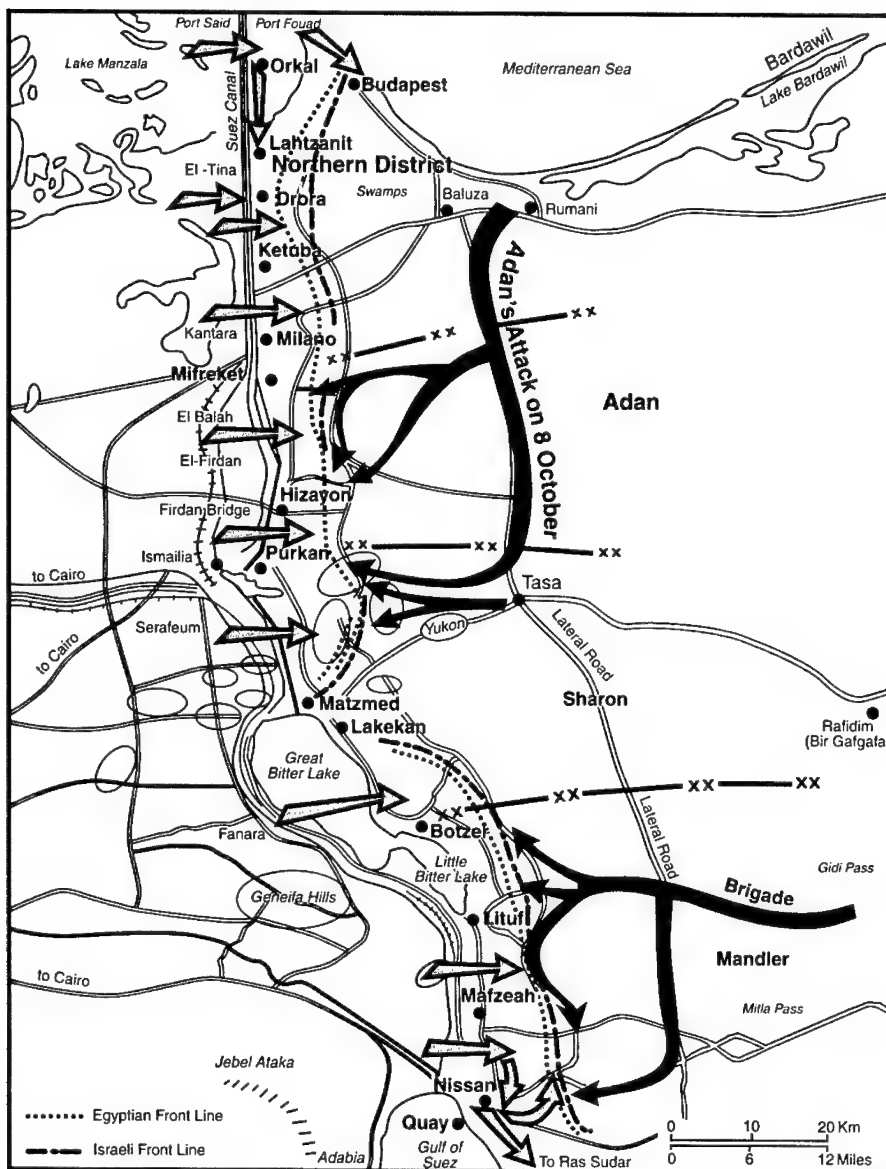
### **Overview**

By 1973 the Arab world had come to the conclusion that the only way it could reclaim the territory lost in the 1967 Six-Day War was through armed action.<sup>1</sup> The combined armies of Egypt and Syria attacked the IDF at 1400 hours local time on



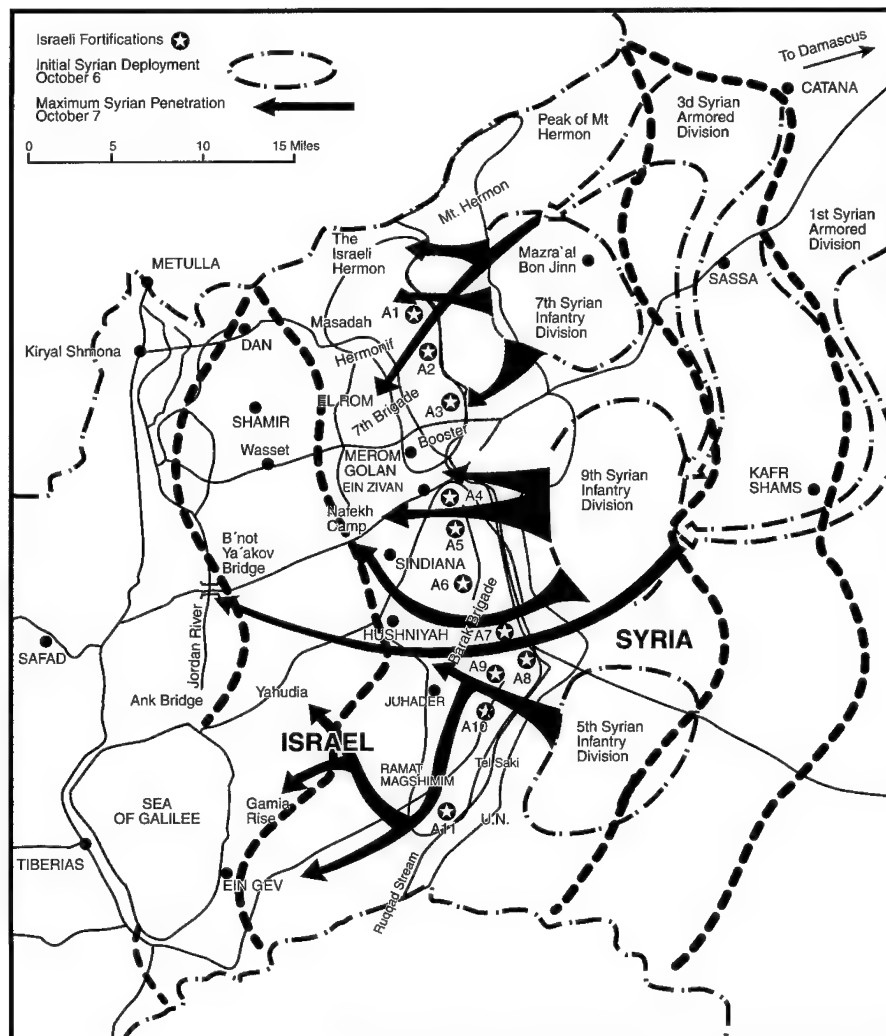
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6 October 1973. In the Sinai, 200 strike aircraft attacked Israeli defensive positions, artillery sites, and infrastructure. As these aircraft crossed the Suez Canal, more than two thou-



**Sinai Front**

sand pieces of Egyptian artillery bombarded the Israeli defensive positions on the Bar Lev Line. Five minutes after the start of the barrage, Egyptian soldiers began crossing the canal and reducing Israeli fortifications. Within 24 hours, the Egyptians had put 100,000 soldiers, 1,020 tanks, and 13,500 vehicles across the Suez Canal. On the Golan Heights, the same type of onslaught was taking place as Syrian forces overwhelmed



**Golan Front**

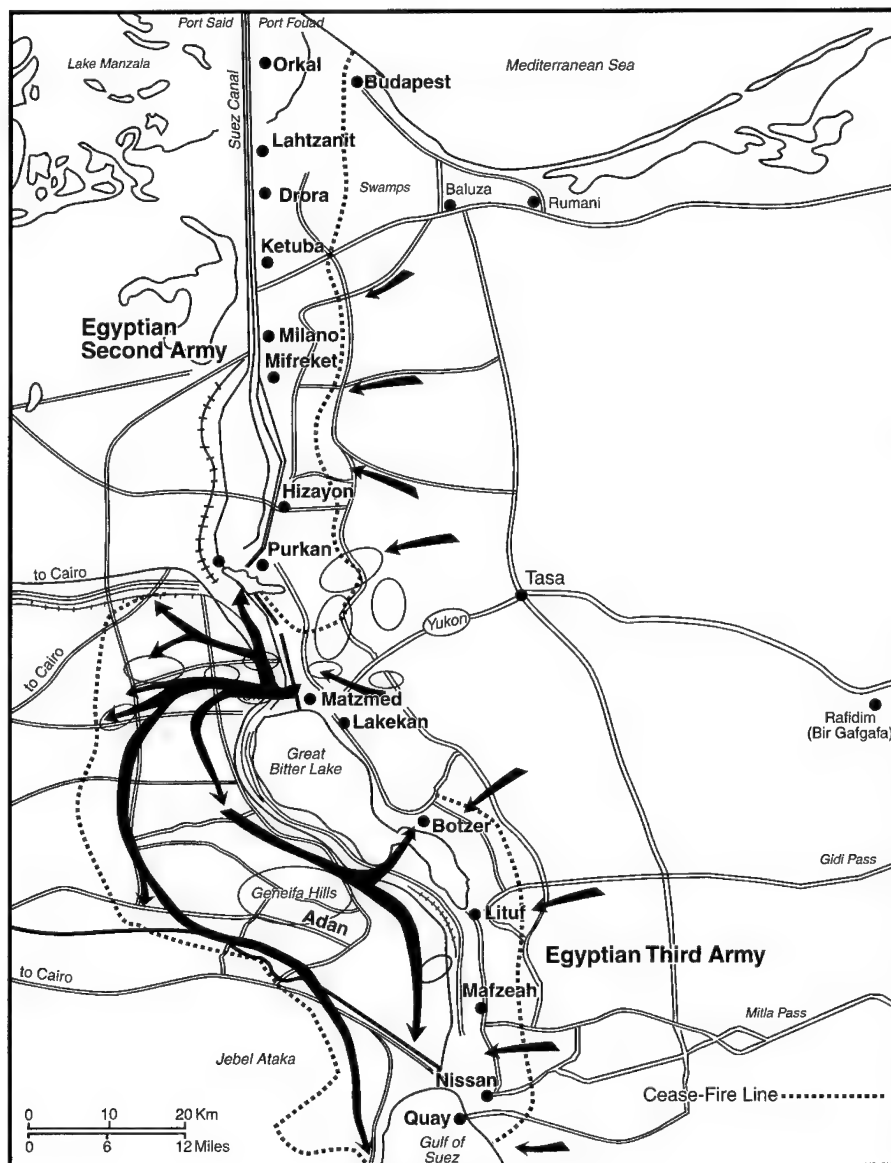
the few Israeli defenders. By the evening of the 6th, Israel realized it was in a full-scale, conventional war with a coordinated Arab alliance for the fourth time in its history.<sup>2</sup>

The Arabs enjoyed initial success. The Egyptians secured and slightly expanded their bridgehead over the Suez. The descendants of the Pharaohs thwarted all Israeli counterattacks from both the ground and air. The Syrians had overrun Israeli defenders in the southern Golan and by nightfall on the 7th had almost retaken their territory lost in 1967. Syrian tanks were within a 10-minute drive of the original Israeli border. The Arab armies were proceeding as planned and inflicting a terrible toll.

The military situation, however, was soon to change. Heartened by effective—though costly—air attacks, the newly arrived Israeli reserves were able to check the Syrian advance in the Golan by 8 October. As Israeli combat power increased, Syrian combat power began to wither under the relentless assault of the IAF. The Israelis quickly turned the tables on their foe and sent the Syrians retreating to their homeland. The retreating Syrian forces were pursued by both ground and air units. Efforts by a freshly committed Iraqi and Jordanian force failed to stop the Israeli advance. By 12 October, the Israelis were advancing to within artillery range of the Syrian capital.

In the Sinai the situation had remained relatively static. Developments in the Golan, however, were soon to enliven the military actions between Egypt and Israel. Answering pleas from their Syrian allies, the Egyptians attempted to continue their offensive in the direction of the mountain passes that led to the interior of the Sinai. This time as they advanced they found an alert enemy. The Israelis—following their unsuccessful counterattacks on the 8th—had been preparing for, and in some sense hoping for, an Egyptian advance. The Israelis knew that any move against them would place the Egyptian army beyond the range of its missile umbrella, thus increasing its vulnerability to airpower. The Egyptians advanced on the morning of the 14th and were immediately engaged by Israeli ground and air forces. Beyond their air defense umbrella and no longer supported by infantry fired antitank weapons, the Egyptians suffered severely. By sundown they were re-

treating to the supposed safety of their bridgehead. In one day, the Egyptians lost more tanks than they had in the entire war to date. More importantly, the Egyptians had committed their



**Israeli Advance**

remaining reserves to action on the east bank of the canal. Precious few forces remained on the west bank of the Suez, a fact that did not go unnoticed by the Israelis.

On the day after halting the Egyptian offensive, the Israelis surged forward. A coordinated air and land effort eventually drove through to and across the Suez Canal. For the next several days, the Egyptians attempted to seal off the crossing from the "Israeli side" of the Suez. Meanwhile, marauding groups of Israeli armor systematically destroyed surface-to-air missile (SAM) sites on the west side. This opened a gap above the crossing through which the IAF could penetrate. Dominated now from the air, the Egyptians had no hope of cutting off the Israeli forces moving steadily deeper into Egypt.

In the last week of the war, both Syria and Egypt suffered at the hands of the IDF. The combination of Israeli airpower and land power had driven the Syrians back to their capital. Israeli forces in the west also advanced into Egypt and encircled an entire Egyptian army on the east bank of the Suez. Only the intervention of the United States and the Soviet Union stopped the fighting. The Arab armies had originally performed admirably; but Israel had survived and, by the time of the ceasefire, achieved the upper hand. One of the main reasons for Israel's ability to turn the military tide was the combat employment of its air force. What the Arabs feared most, Israeli air superiority, had spelled their doom.

### **Maneuver Force Characteristics of Israeli Air Operations**

The IAF demonstrated all four maneuver force characteristics in its battle with the Arab coalition. It exerted a zone of influence over both the Egyptian and Syrian armies. It gained and maintained a position of advantage over the enemy by turning the vertical flank. Throughout the war, the IAF closed to contact with the enemy and placed him under direct fire. Examination of the planning and execution of combat operations shows that Israeli airpower did, indeed, demonstrate the characteristics of a maneuver force in the 1973 war.

### **Denying the Vertical Flank—Arab Counter to Zone of Influence Operations**

Arab experience in previous conflicts had taught them to fear the IAF. The Arabs had suffered tremendous losses in both men and equipment during the 1967 war. In just six days, the Egyptians, Jordanians, and Syrians had suffered 68,000 casualties and lost more than one thousand tanks and most of their air forces.<sup>3</sup> The majority of the damage had come at the hands of the IAF. Israeli air superiority during the war gave them an unqualified advantage. Israel's freedom to operate in the vertical dimension had a devastating physical and psychological effect on Egyptian forces in the Sinai.<sup>4</sup> Egypt's combat experience in the 1956 war had also shown the vulnerability of its land forces to air attacks. Travel in the Sinai desert and mountain passes was limited to roads or hard tracks. Thus, armored columns were easy prey to aircraft.<sup>5</sup> Combat during the War of Attrition from 1967 to 1970 had confirmed in the Egyptian mind the combat capability of the IAF.<sup>6</sup>

Other Arab nations also understood the threat posed by enemy aircraft. The Syrians realized that without their control of the skies, the Israelis would dominate their ground forces.<sup>7</sup> Jordan also feared the long arm of the IAF. Concern over the capability of Israeli airpower to destroy his forces and infrastructure was a major consideration for King Hussein I in initially deciding not to join his Arab brothers in their war against Israel in 1973.<sup>8</sup> The Arab states realized they were under a zone of influence exerted by the IAF.

The IAF zone of influence became more and more evident as Egypt and Syria considered their military vulnerabilities. Four vulnerabilities were directly attributed to the threat presented by the Israeli air arm: Jordan's desire not to participate, Arab deficiency in air defense systems, lack of military resources to replace high rates of attrition, and Israeli superiority in movement and maneuverability.<sup>9</sup> The Arabs knew their mobility would be limited and their forces would suffer significant attrition if the IAF was free to roam the battlefield. In the end, the Egyptians and the Syrians came to the conclusion that

their only chance for success was to protect their vertical flank and thus avoid the IAF zone of influence.<sup>10</sup>

The Arabs initiated numerous measures to deny the Israelis use of the air. While these measures were somewhat successful, they had limits that influenced Egyptian and Syrian operational planning. All operations would have to be conducted within the limits of the Arab ability to eliminate the Israeli zone of influence over their ground forces. The first measure pursued by the Egyptians was to build an air force capable of destroying the IAF on the ground. To do this, they turned to the Soviet Union for medium bombers and fighter-bombers that were capable of reaching targets inside Israel. The Russians were concerned about world opinion and thus were reluctant to give the Egyptians assets with the required range and payload necessary to undertake the task.<sup>11</sup> Instead, the Soviets offered short-range interceptors, better early warning radars, advisors, and a significant increase in SAM systems.<sup>12</sup>

The influx of Russian missile systems became the cornerstone of the Arab efforts to deny the Israelis control of the skies. The Soviets flooded Egypt with SA-2s, 3s, and 6s as well as providing SA-7s for forward troops. The combination of these missile systems gave the Egyptians the ability to engage Israeli aircraft at all altitudes and within 15 miles of the Suez Canal. In addition, mobile SA-6s and infantry launched SA-7s provided some protection to mobile forces outside the SA-2 and SA-3 engagement zones. The Egyptians began a massive effort to construct an air defense system that would protect their vertical flank for a cross-canal attack. SAM-site construction made up 90 percent of all Egyptian engineering efforts prior to the war. The results of these labors were impressive. By the start of hostilities, the Egyptian missile network was truly an integrated, defendable system. The firing batteries were located in hardened positions with their own antiaircraft artillery for short-range defense. Additionally, the batteries were placed so that they had interlocking fields of fire. Early warning sites fed information into C<sup>2</sup> facilities in underground bunkers.<sup>13</sup> The Egyptians hoped their missile forces would form a shield over their ground troops. As events would

show, the integrated air defense system (IADS) would prove a formidable obstacle to the IAF.

The Syrians also were building antiair defenses, though they began somewhat later. The Syrians began an accelerated program of SAM purchases in April 1973 that concentrated on buying mobile systems to protect frontline troops. They bought and deployed mostly SA-6 missiles, a system designed to support advancing armor columns. To defend their rear areas, the Syrians relied on the short-range interceptor aircraft they received from the Soviets that same spring.<sup>14</sup> Thus, the Syrians had also built an integrated system that would challenge the IAF.

The Egyptians undertook measures to secure their bridges that they knew were vulnerable to air attacks. They reasoned that they could limit the Israeli air effort if they could hide the bridges. To accomplish this task, they planned for the use of smoke generators and decoy bridges. Smoke screens were to be laid for both decoy and actual bridges, but the smoke screens for the decoys were placed so that they did not adequately cover the crossing. The appearance of an Egyptian mistake in the placement of their smoke generators was intended to reinforce the Israeli belief in Egyptian military incompetence.<sup>15</sup> To aid in the deception effort, the Egyptians planned to construct as many as 60 crossing points along the canal and move the bridges nightly. By taking such extensive efforts, the Egyptians hoped the Israelis would waste air strikes on abandoned crossings.<sup>16</sup>

The Egyptians knew, however, that hiding bridges alone would not be sufficient to limit IAF effectiveness. In addition, they planned to disperse their force, thus diffusing Israeli airpower. In crossing the Suez, the Egyptians planned to attack across the widest possible front that would require 60 breaches in the Israeli sand barrier on the east bank, eight heavy-duty bridges, four light bridges, and 31 ferries.<sup>17</sup> The mobile bridges could be moved nightly. The Egyptian assault across the canal used multiple crossing points along five main axes of attack.<sup>18</sup> The Egyptians hoped that by presenting the IAF with multiple targets they would force the Israelis to disperse their attacks, thus diminishing their effectiveness.



Despite the comprehensive measures taken to counter the IAF, limitations subsequently appeared that would influence military operations. Most of the SAMs were relatively static and would not support a war of rapid maneuver.<sup>19</sup> The extensive SAM belt built by the Egyptians could only hit aircraft approximately 20 kilometers (km) across the canal. It was another 30 km to the mountain passes that controlled entrance to the interior of the Sinai. Any move to take these important objectives would expose the advance forces to the IAF.<sup>20</sup> Even mobile SAMs such as the SA-6s were considered too weak to support an offensive beyond the range of the SA-2s and SA-3s.<sup>21</sup> The bottom line was that while the Egyptian and Syrian armies were mobile, their air defenses were not. The Arab armies would not be asked to advance beyond the range of their missile umbrella, at least not until circumstances dictated otherwise.<sup>22</sup>

The limitations imposed by the static nature of the air defenses sparked a serious debate among Egyptian leaders. Postwar writings of senior Egyptian commanders diverge on the original goals of the offensive. One argument claims the attack was never intended to extend on beyond the missile umbrella and that it was continued only in reaction to Syrian cries for help. The opposing view claims that, from the initial planning stages, the offensive was designed to continue to the strategic mountain passes in the Sinai. What is certain, however, is that the IAF zone of influence was a primary concern for Egyptian planners.<sup>23</sup>

To attempt to break free of the IAF zone of influence, the Arabs built immense air defense systems. In addition, they went to great lengths to deceive the Israelis and confuse the IAF. Fear of the IAF directly shaped both the Egyptian and Syrian offensives and limited their options. Egyptian chief of staff Lt Gen Saad El Shazly made this point clear when he stated, "Well over one hundred miles of open desert stretched between our bridgehead and the frontier of Israel. Israeli air superiority rendered them impassable."<sup>24</sup> The resultant plan for the attack rested on the ability of the air defenses to protect the vertical flank. As events would show, when the flank was secured, the Arabs were successful; when it was exposed,

they suffered. The Israeli ability to maneuver against the Arabs in the third dimension was thus the focal point of the war. The Egyptian debate over whether to continue their advance after securing the bridgehead across the Suez centered on their fear of the IAF.<sup>25</sup> The subsequent decision to continue was one they would come to regret.

The Egyptians were initially quite successful. Their plan to deny Israel uncontested use of the air during the canal crossing proved to be well founded. In just 24 hours, they put a significant amount of combat power across the canal and stopped Israeli counterattacks from both the air and ground.<sup>26</sup> The Egyptians thus succeeded in removing the IAF zone of influence over their forces. By 1700 on 6 October, the IAF was ordered not to operate within 15 km of the east bank of the Suez.<sup>27</sup> The Egyptian IADS thus protected the flank. Unfortunately for the Arabs, this restriction on flight operations would not last. The Israelis soon attempted to remove the protective cover.

### **Turning the Vertical Flank—Gaining a Position of Advantage**

The Israelis clearly understood the importance of their air force, and they counted on their airpower to blunt any Arab assault. Evidence that the Israelis placed the lion's share of their national security in their air force is found in their defense budget. By 1973, more than one-half of the entire defense budget went to the IAF. After the 1967 war, the Israelis considered a superior air force and air superiority to be essential to maneuver warfare.<sup>28</sup> The IAF had demonstrated its power in the 1967 war by destroying the Arab air forces on the ground and severely punishing Arab ground forces. In 1967 the main threat to Israeli air operations was enemy interceptors. By 1973 the IAF faced a new challenge. To gain a position of advantage over Arab forces, the Israelis would have to overcome the enemy SAM threat. Despite the threat these systems posed, Israel was confident it could inflict enough damage to turn the vertical flank.

During the war of attrition, the Israelis gained firsthand experience of the changing defense system in place in Egypt.

While they took losses, combat experience had shown that the IAF could penetrate Egyptian airspace and destroy SAM sites.<sup>29</sup> One particular skirmish helped reinforce this thought. On Christmas day 1969, Israel struck at the growing Egyptian IADS along the Suez. In a continuous eight-hour raid, the IAF destroyed every missile battery in the Canal Zone.<sup>30</sup> These combat lessons convinced the Israelis that they could destroy the Arab IADS with acceptable losses as long as they had enough time.

Time was something that all Israeli war plans assumed they would have. The Israeli defense community was positive it would have at least 24 hours' warning prior to any Arab attack.<sup>31</sup> It counted on another 48 hours before the Egyptians could be in position to attack into the Sinai: 24 hours to bridge the canal and an additional 24 hours to transfer sufficient combat units across the canal to conduct an offensive. This total of three days would allow Israel's ground units, of which the majority were reserve formations, to mobilize and deploy to the field. It was also assumed that during this time the IAF would sweep the skies clean of enemy aircraft and destroy missile batteries long before it would be forced to engage ground forces. By the time an Arab army started an offensive, it would meet a prepared Israeli force that had air superiority.<sup>32</sup> Unfortunately, the assumptions about how much warning time they would have of an Egyptian attack and how long it would take the Egyptians to cross the Suez turned out to be invalid, thus prejudicing implementation of the entire plan.

Israel did not receive an unambiguous warning 24 hours prior to the commencement of hostilities. On 5 October the IDF began to get some indications that an Arab attack might be forthcoming. In response, it began a partial mobilization. By 0430 on 6 October, however, Israel knew that it would be attacked by 1800 that evening.<sup>33</sup> The commander of the IAF, Maj Gen Benjamin Peled, immediately configured his aircraft for operations against the Arab defenses and pressed for permission to conduct a preemptive attack. Israeli leaders weighed the options and denied the request. They apparently decided to "suffer" the first strike so as to avoid an unfavorable reaction in the court of world opinion. Because full mobiliza-

tion had been delayed, General Peled realized his plans for destroying the enemy air defenses prior to engaging ground forces would not be possible, especially since Syria was expected to attack the Golan Heights. In the early afternoon, before the 1400 H Hour, General Peled was forced to change the configuration of his aircraft to counter possible air attacks and interdiction.<sup>34</sup> The IAF was thus compelled to operate in the face of a well-defended vertical flank.

The vigor and intensity of the Arab assault forced the IAF into action against ground forces before it desired to do so. When possible, however, the Israelis clawed their way to a position of advantage in the air. On both fronts, Sinai and Golan, Israeli aircraft and ground forces went to great lengths to turn the vertical flank. Losses were heavy, especially during the initial portions of the campaign. The IAF lost 50 aircraft in the first three days of the war.<sup>35</sup> Through dogged determination, Israel finally achieved its goal of air superiority over both the Egyptians and the Syrians.

By the second morning of the war, the IAF began defense suppression operations against the Egyptian IADS. Losses over the canal to missile fire on the 6th had convinced the Israelis they had to destroy the enemy defenses before directing airpower against the Egyptian army. The IAF planned to destroy the Egyptian IADS along the canal on 7 October much as they had done on 25 December 1969. They were forced to suspend their efforts after the first sortie due to pressure by Syrian ground forces in the Golan. While they barely made a dent against the SAMs, their effort succeeded in some respects. The Egyptians were concerned about losing their air defenses. As an answer to this concern, they decided to hold their air force in reserve to be used if the SAMs were lost. The intensity of the IAF attacks helped to keep the Egyptian air force on the defensive and left the skies over the Sinai to the Israeli pilots and Arab SAMs.<sup>36</sup>

The deteriorating ground situation after 7 October made the Israelis forgo a concentrated suppression of enemy air defenses (SEAD) campaign against the Egyptians. The IAF loss rate grew as it was forced to attack ground targets in the face of Egyptian defenses. These losses, and the need to conduct op-

erations against the Syrians, forced the IAF to disperse. The Israeli ability to destroy Egyptian missile sites was limited. The Israelis still sought to gain air superiority and a position of advantage. Israeli air and ground commanders decided on a true combined arms approach using artillery, armor, and air to cross the Suez Canal and "blow a hole" in Egyptian air defenses.<sup>37</sup> On 15 October, the Israelis saw their opportunity for such a move. Small groups of tanks attacked and crossed the Suez engaging SAMs wherever they were found. Air defense missile battalions were attacked one by one. Tanks drove within range, fired, and then rapidly moved on.<sup>38</sup> These attacks created gaps in the Egyptian defensive coverage that were promptly exploited by the IAF.<sup>39</sup> Without an integrated system, the individual missile batteries became vulnerable. Israeli aircraft then began employing standoff weapons newly received from the United States. When deadly accurate fire from the air began to take its toll on the missile units, the Egyptians realized they were once again in danger of losing their army to Israeli air.<sup>40</sup>

The Israelis worked equally hard to gain air superiority over the Syrians. The battle in the skies over the Golan was short, sharp, and decisive. The IAF attacked into the teeth of the enemy air defenses in order to join the struggle against the advancing Syrian armored columns and thus aid the beleaguered Israeli ground forces. Their losses soared. The Israelis would have to defeat the Syrian IADS if they were going to sustain this air offensive. The first step the IAF pilots took to mitigate Syrian missile systems was to outflank the defensive positions by flying in low through Jordan's airspace. They were thus able to present the Syrians with varied attack axes that caused problems for the Arab defenses. This tactic and the use of terrain masking began to turn the tide in favor of the IAF.<sup>41</sup>

Flanking Syrian air defenses gave the Israelis the opportunity to strike at the heart of Syria. Israeli High Command had pinpointed Syrian air defense headquarters in Damascus and planned an attack for 9 October. Israeli F-4 Phantoms approached Damascus through Jordan and successfully attacked the central Syrian air command facility. The cohesion of the Syrian SAM batteries was thus lost for the remainder of

the war. As they would in the Sinai a week later, the Israelis had turned the vertical flank.<sup>42</sup>

Despite initially severe setbacks, the Israelis eventually won air superiority over both the Sinai and the Golan. The air and ground operation against SAM batteries had significant results. Fifty out of 62 deployed missile sites were destroyed in the battle for the Sinai, 40 batteries by air attack, and the remaining 10 by ground forces.<sup>43</sup> In direct combat with Arab fighters, the Israelis claimed to shoot down 334 aircraft.<sup>44</sup> Israeli losses were initially very high but were acceptable over the course of the war. In 20 days of combat, the IAF lost approximately 112 fighters.<sup>45</sup> The Israeli losses amounted to a ratio of one aircraft for every 100 sorties flown. In 1967 the IAF had a loss ratio of four aircraft for every 100 sorties.<sup>46</sup> These numbers, however, do not tell the whole story. Israeli commanders became very concerned over their staggering loss rate at the outset of the conflict. Losses on the first day caused General Peled to suspend air attacks within 15 km of the Suez Canal for a 12-hour period.<sup>47</sup> One-half of all Israeli aircraft losses occurred in the first three days of the war.<sup>48</sup> Despite these losses, the IAF did not relent in their attacks. Even in the face of sophisticated air defenses, IAF efforts to gain a position of advantage managed to save aircraft in the long run. It was, however, the exploitation of this advantage that was most significant.

### **Exploiting a Position of Advantage—Closing with the Enemy and Engaging with Direct Fire**

Israel's main desire for gaining a position of advantage in the air was to use it to engage the Arab armies. The Israeli's small manpower pool forced them to rely on the mobilization of reserves to field their army in a time of crisis. Ground forces along the front were inadequate to stop any dedicated attack; therefore, the IAF was tasked to carry the burden against an enemy during the initial stages of a conflict.<sup>49</sup>

During the war, the IAF was forced to fend for itself in the battle against the invading land forces. At the start of the war, Israeli ground forces were not fully mobilized and not organized for air to ground coordination of close air support (CAS) strikes.

Consequently, the IAF became responsible for all operations outside the view of ground commanders.<sup>50</sup> Air force planners coordinated with army higher headquarters channels received their own intelligence and then independently tasked air units against Arab ground formations.<sup>51</sup> Once airborne, the majority of air attacks against ground force targets were controlled and executed by air commanders, not their ground counterparts, as in CAS operations.<sup>52</sup> Of all the attacks by the IAF against Arab ground units, more than 90 percent were not under the positive control of a ground commander.<sup>53</sup>

Israeli aircraft were configured to support these types of air-to-ground operations. In both their primary attack aircraft, the F-4 Phantom and A-4 Skyhawk, the 20 millimeter (mm) was replaced with a 30 mm cannon. The larger cannon was designed mainly to engage a wide variety of ground targets.<sup>54</sup> In addition, the IAF made good use of the newly arrived AGM-65 Maverick missile. The AGM-65, designed to destroy tanks, required a pilot to acquire his target visually.<sup>55</sup> In this way, IAF aircrews were able to bring Arab armored and other ground units under direct fire from the air.

The IAF made its presence felt throughout the campaign in both the Sinai and Golan. The Egyptians and the Syrians each received their fair share of attention. In the Sinai, the IAF initially attacked bridges in an effort to seal off Egyptian forces. When the front stabilized, the Israeli flyers hunted any Egyptian force that dared venture beyond its SAM umbrella. When the Israelis counterattacked, they roamed the battlefield assisting the breach of the Suez and the encirclement of the Egyptian Third Army. Against the Syrians, direct attack from the IAF was key in stopping the offensive that almost broke into Israel. Not unlike cavalry of Napoleonic warfare, the Israeli air arm directly engaged the enemy and changed the military tide.

In the ground war, the first objective of the IAF was to destroy the bridges over the Suez Canal. In spite of Egyptian efforts to conceal their positions, the IAF was able to do appreciable damage to these targets. Although the Egyptians made round-the-clock repairs, the IAF's relentless attacks began to take a toll by the second day. By 8 October, the Egyptians lost the equivalent of three heavy bridges. This loss rate and the

fact that they had only four heavy bridges in reserve alarmed them. With only one heavy bridge operating per division across the canal, it was possible that Israeli air action would sever the Egyptian LOC.<sup>56</sup>

The IAF shifted its emphasis to attacking Egyptian forces directly. As the Egyptian army maneuvered to expand the bridgehead, the 1st Mechanized Infantry Brigade became the first unit to fall prey to the IAF. On 10 October, this Egyptian unit left the protective cover of its air defenses and moved along the Gulf of Suez toward Ras Suder. It was almost immediately set upon by the IAF. Within a few hours, the brigade was routed and lost a substantial portion of its men and equipment.<sup>57</sup> These attacks and others by the IAF amounted to aerial spoiling attacks that denied Egyptian efforts to expand the battle beyond the Canal Zone.

The real test of the IAF's ability to bring the enemy ground forces under direct fire came on 14 October when the Egyptian army advanced out from under its SAM coverage. The Egyptians, in an effort to take pressure off the Syrians, made their largest effort to advance to the strategic mountain passes just beyond their lines. They were handily repulsed by the combined action of Israeli air and ground units. The situation was ripe for heavy air action. When the Egyptian attack on the 14th stalled in the face of the fully mobilized Israeli ground forces, the Arab tanks and troop carriers were concentrated and without air defense.<sup>58</sup> Given the now favorable situation in the Golan, the IAF was free to concentrate its aircraft against the Egyptian attack. Aircraft that only hours prior had been hammering Syrian forces were now attacking Egyptians. Within two hours, the IAF had destroyed an estimated half of the attacking Egyptian forces.<sup>59</sup> During the battle, the Israeli ground mobile reserves were never committed.<sup>60</sup> The Egyptians were stopped within 10 miles of their departure points and forced to retreat rapidly to the protection of their air defenses.<sup>61</sup>

Action on 14 October gave the Israelis the opportunity to counterattack the next day. The IAF was critical to the ensuing combat operations. The Israeli Adan division, assigned the task of breaking through and crossing the Suez, relied on aircraft to secure its flanks and protect the breach. The Egyptian



25th Armored Brigade was sent to cut off the Israeli attack but was forced to retire under heavy air attack.<sup>62</sup> When the ground forces were securely established across the Suez, the IAF paved the way for the encirclement of the Egyptian Third Army, which was directly targeted by the IAF.<sup>63</sup> The hapless Egyptians had only limited air defense and could not move. Israeli ground units pressed them from two sides. The IAF eliminated any hope of recrossing the Suez by destroying the Arab bridging equipment. As the Israeli tanks and men formed a ring around the Third Army, the IAF attacked it from the air.<sup>64</sup>

The combat action between the IAF and the Syrian army was much the same. The one notable difference was the Syrian style of attack. The Egyptian attack had a built-in operational pause to consolidate its bridgehead and consider further action.<sup>65</sup> The Syrian attack was not designed to pause until it had taken all of the Golan Heights; and, even then, they would consider continuing into Israel. Any operational pause would have to be won by a force that would stop the Syrian advance. The IAF was that force.

The importance of the IAF on the Golan front is made clear by the initial numbers of opposing forces. The Syrians attacked with more than 1,500 tanks and 1,000 artillery pieces. The ground forces defending against this threat fielded only 170 tanks and 60 guns.<sup>66</sup> Strong, accurate attacks from the air were thus indispensable to a successful defense. Compounding the unequal numbers on the ground was the fact that the Israelis had no room to fall back in the Golan as they did in the Sinai. It was thus conceivable that without IAF action, the Syrians would be into Israel before the reserves could be mobilized.<sup>67</sup>

When the severity of the Syrian attack was realized, the IAF focused its efforts on halting the advance. Israeli defense minister Moshe Dayan ordered the IAF into the fray, boldly asserting, "only the Air Force could possibly stop the Syrian advance."<sup>68</sup> To comply with the defense minister's order, General Peled gave orders to attack the Syrian forces with "everything we had."<sup>69</sup> His orders sent the IAF into a headlong assault on the advancing Syrian forces in the face of an active air defense. The Israeli pilots poured into the Syrian positions and despite

heavy losses fought a delaying action that gave the ground forces the time they needed.<sup>70</sup>

In the end, direct fire from the IAF had a significant effect on the Syrian forces. On the morning of 7 October, the Syrians were turned back along two of their main avenues of attack in the Golan. The only defenders the Syrians faced on these two axes that morning were aircrews of the IAF.<sup>71</sup> By 8 October, the offensive had run its course. Syrian units were severely reduced and without supply, while Israeli reserves were rapidly arriving on the battlefield. The IAF now was free to strike throughout the theater, crippling the Syrian supply effort. A United Nations observer caught behind the Arab lines reported that the Syrians on the front were receiving no supplies. When the Israeli forces advanced, they discovered that one-fourth of all Arab tanks left on the battlefield were still operational, having simply run out of gas.<sup>72</sup> A handful of Israeli soldiers and the courage and skill of the IAF had stopped the Syrian offensive.

An attack by IAF A-4s serves as an excellent example of the unequalled courage and determination of the Israeli pilots in the campaign against the Syrians. Israeli ground soldiers witnessed an attack of two flights of four Skyhawks against advancing Syrian troops. When the first four aircraft went to attack, all exploded in midair before delivering their ordnance. Despite being in full view of this attack, the second flight of four continued. Of the second flight of four, the lead two aircraft also were shot down while approaching the target. The last two pilots rammed home their attack, dropped their bombs, and safely flew away.<sup>73</sup> The actions of these men in aircraft were no less courageous than the efforts of soldiers who have undertaken direct frontal assault on prepared positions. These IAF pilots, like the ancient Greek hoplites, closed with the enemy and engaged them directly.

### **Summary**

The IDF knew the ground screening forces were inadequate to hold. Therefore, the IAF had to be the protective force under which the main ground forces could mobilize and deploy. Hard lessons of previous wars reinforced this concept for both the

Israeli and Arab forces. The IAF was a force to be reckoned with as much as Israeli ground units. The fighter-bombers of Israel extended a zone of influence over their opponents that set limits on what the Arabs, especially the Egyptians, thought they could achieve militarily. To hope for any success, the Arabs knew they would have to escape the control of the IAF by denying it a position of advantage. The air over the Middle East thus became as important as any land feature. The Israelis fought with grim determination to gain that position of advantage, but these operations came at a high price. The IAF suffered high losses until it suppressed the Arab defenses. Even with the high losses, however, the Israelis closed with the enemy and placed them under direct fire, without ground force control. Aircrews found and engaged their own targets, making the battles in both the Sinai and the Golan actions between the Arab ground forces and two independent Israeli maneuver forces. Israel's ground force and its air force worked in cooperation to achieve a common result. In a desert environment, similar to that of the 1991 Persian Gulf War, airpower had demonstrated the functions of a maneuver force. But this time the object of its maneuver and destruction was a mobile, attacking force rather than a static defending force.

### Notes

1. Maj Gen D. K. Palit, *Return to Sinai: The Arab Offensive, October 1973* (Dehra Dun, India: Palit & Palit Publishers, 1974), 39.
2. Lt Gen Saad El Shazly, *The Crossing of the Suez* (San Francisco: American Mideast Research, 1980). General Shazly provides a detailed account of the initial stages of the 1973 war.
3. Maj Bruce A. Brant, *Battlefield Air Interdiction in the 1973 Middle East War and Its Significance to NATO Air Operations* (Fort Leavenworth, Kans.: US Army Command and General Staff College, 1986), 35.
4. Mohamed Abdel Ghani El-Gamasy, *The October War: Memoirs of Field Marshal El-Gamasy of Egypt*, trans. Gillian Potter et al. (Cairo, Egypt: American University in Cairo Press, 1993), 56.
5. Shazly, 23.
6. Ibid., 12-13.
7. Frank Aker, *October 1973: The Arab-Israeli War* (Hamden, Conn.: Archon Books, 1985), 24.
8. Chaim Herzog, *The War of Atonement October, 1973* (Boston: Little, Brown and Co., 1975), 260.
9. Gamasy, 161-62.
10. Shazly, 25.

11. Herzog, 254.
12. Gamasy, 116-17.
13. Brant, 45.
14. Palit, 91.
15. Ibid., 80-81.
16. Shazly, 232.
17. Ibid., 231.
18. Avraham Adan, *On the Banks of the Suez: An Israeli General's Personal Account of the Yom Kippur War* (Novato, Calif.: Presidio, 1980), 86.
19. Shazly, 20.
20. Dr. George W. Gawrych, *The 1973 Arab-Israeli War: The Albatross of Decisive Victory*, Leavenworth Papers no. 21 (Fort Leavenworth, Kans.: Combat Studies Institute, 1996), 20.
21. Shazly, 29.
22. Palit, 31.
23. For a complete discussion of the debate see Gamasy, 128-39; Shazly, 17-39; and Palit, 38-49.
24. Shazly, 251.
25. Ibid., 246.
26. Maj Johnnie H. Hall, "Airpower Effectiveness against the Tank" (Maxwell Air Force Base [AFB], Ala.: Air Command and Staff College, April 1976), 19.
27. Gamasy, 215.
28. Gawrych, 7.
29. Gamasy, 114.
30. Brant, 41.
31. Herzog, 255.
32. Gawrych, 18.
33. Ibid., 26.
34. Lt Col C. A. Horner, *Comments and Observations Made by Major General Benjamin Peled, Commander Israeli Air Force* (Maxwell AFB, Ala.: Air Force Historical Research Agency, 1974), file no. K143.505-5 73/10/29-73/12/11, vol. 2, 2-3.
35. Herzog, 260.
36. Adan, 41.
37. Ibid., 235.
38. Gamasy, 288.
39. Palit, 140.
40. Gamasy, 294.
41. Maj Jimmy H. Church and Maj Robert T. Osterthaler, *The Battle for Air Superiority during the 1973 Arab-Israeli War* (Quantico, Va.: Marine Corps Command and Staff College, 1983), 32.
42. Peter Allen, *The Yom Kippur War* (New York: Scribner, 1982), 163-68.
43. Louis Williams, ed., *Military Aspects of the Israeli-Arab Conflict* (Tel Aviv: University Publishing Projects, 1975), 241.
44. Herzog, 259.
45. Ibid., 260.
46. Brant, 96.
47. Gamasy, 215.
48. Herzog, 260.

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49. Church and Osterthaler, 53.
50. Horner, 4-5.
51. Maj Thomas D. Entwistle, *Lessons from Israeli Battlefield Air Interdiction during the Battle for Golan, October 1973* (Fort Leavenworth, Kans.: US Army Command and General Staff College, 1988), 12.
52. Horner, 5.
53. Brant, 77.
54. Entwistle, 23.
55. Church and Osterthaler, 49.
56. Gawrych, 39.
57. Shazly, 241.
58. Chaim Herzog, *The Arab-Israeli Wars: War and Peace in the Middle East* (New York: Random House, 1982), 260.
59. Ibid.
60. Adan, 241.
61. Shazly, 248.
62. Gamasy, 289.
63. Herzog, *The Arab-Israeli Wars*, 279.
64. Shazly, 270.
65. Gamasy, 138-39; and Shalzy, 37.
66. Herzog, *The Arab-Israeli Wars*, 285.
67. Hall, 17.
68. Jerry Asher and Eric M. Hammel, *Duel for the Golan: The 100 Hour Battle that Saved Israel* (New York: William Morrow and Co., 1987), 156.
69. Entwistle, 11.
70. Palit, 99.
71. Williams, 242.
72. Entwistle, 48-49.
73. Allen, 101.

## Chapter 4

### **1972 Easter Offensive**

*The air cover commenced at 1530 as F-4s delivered every type of ordnance. The tactical situation dictated that normal safe distances be waived. So, we could do nothing but watch, wait, and thank God for the U.S. Air Force.*

—Maj Brookbank, US Air Liaison Officer  
3d ARVN Division, Quang Tri, 1972

Airpower's potential to function as a maneuver force in a desert environment against an enemy on the offensive has been the focus of this study to this point. Now it will consider airpower employment in a jungle environment against an enemy conventional attack. Over a half a world away and little more than a year earlier, airpower had played a major role in another conventional war. This time the battles took place in the jungles of Southeast Asia. This case examines how the United States used airpower against communist forces to defeat the North Vietnamese Army's (NVA) 1972 Easter offensive. Between November 1971 and April 1972, the NVA moved forces into position and launched a large-scale conventional attack into South Vietnam (SVN). During the invasion, American airpower attacked the NVA throughout the entire theater to halt its attack.

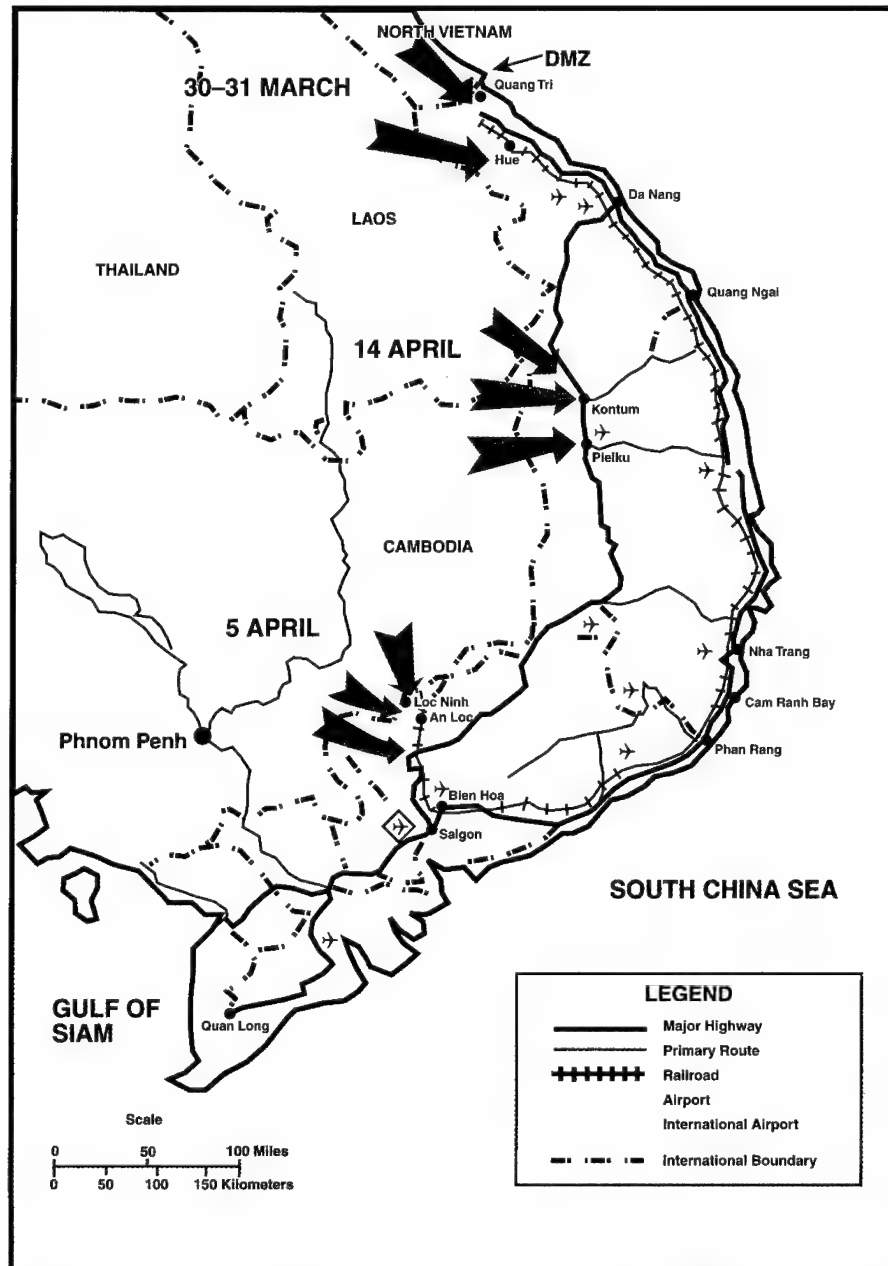
### **Overview**

Despite the withdrawal of a large number of American ground forces in 1971, the North Vietnamese faced a deteriorating military situation with respect to their war in the south. Pacification programs in the south were slowly eliminating the Vietcong's cadre. The American program of Vietnamization was building a more stable Republic of Vietnam (RVN) with better armed forces capable of limited offensives. Interdiction efforts were also taking their toll on the Democratic Republic of Vietnam's (DRVN) infiltration efforts. The loss of Cambodian

port facilities placed an increased emphasis on movement down the Ho Chi Minh Trail to supply NVA forces in the south. This loss, in turn, helped to create better targets for an American air force gaining interdiction experience with every season.<sup>1</sup> From October 1970 to May 1971, aerial interdiction destroyed almost 90 percent of NVA throughput down the Ho Chi Minh Trail.<sup>2</sup> These factors apparently pushed the North to aim for an outright military victory with a conventional invasion of the South.<sup>3</sup>

While the Americans and South Vietnamese forces were unaware of the North's specific decision to invade, they understood the potential. To counter, the allies planned an interdiction operation known as Operation Commando Hunt VII. Commando Hunt VII was a continuation of the effort to impede infiltration into SVN from Laos. Starting in November 1968, the Commando Hunt series of interdiction operations was planned and conducted based on seasonal weather patterns. Odd-numbered operations took place during the dry season from November to May, while even-numbered operations were attacks during the wet season from June to October. The dry season gave the NVA the best opportunity to move large amounts of material down the trail.<sup>4</sup> Commando Hunt VII began on 1 November 1971 and lasted until the North Vietnamese troops came pouring into SVN in March 1972.

By late 1971, intelligence reports showed an increase in NVA combat power in-theater and a corresponding projection of its air defense coverage into Laos and SVN. These reports generated an urgent desire to strike NVA concentrations wherever they were found including North Vietnam (NVN). The strike operation, code-named Proud Deep Alpha, was designed as a spoiling attack in response to the NVA buildup in Laos and across the demilitarized zone (DMZ) between NVN and SVN.<sup>5</sup> The Proud Deep Alpha strikes in December 1971 were supplemented by increased attacks on NVA fielded forces in the RVN in February 1972. At the direction of the Joint Chiefs of Staff (JCS), Seventh Air Force executed intense tactical air (TACAIR)<sup>6</sup> and B-52 sorties against suspected troop concentrations.<sup>7</sup> These attacks would continue until the North Vietnamese offensive forced a change in effort.



1972 Easter Offensive



On the morning of 30 March 1972, the invasion that the allies feared became a reality. Most of the conventional might of the NVA stormed into SVN. The NVA attacked with a force of more than 120,000 regulars supported by heavy artillery and, for the first time, concentrated armor units. There were three main thrusts. The main effort of the offensive came out of the DMZ in the direction of Quang Tri. The second thrust launched from Laos against Kontum and Pleiku. The third prong came out of Cambodia and drove against Loc Ninh and An Loc. The North's objective was to destroy the major ARVN forces in a conventional battle, humiliate the remaining US forces, and cause further disorder in the American political and domestic arenas. For the next three months, both sides were locked in a significant conventional battle. Initially, the North made respectable gains. By the end of April, the NVA had captured the provincial capital of Quang Tri and laid siege to Kontum and An Loc.<sup>8</sup>

By the beginning of May, the situation began to stabilize. ARVN units began to rally, and US airpower was taking its toll. US commanders were given the authority to attack the NVA from the front line to Hanoi. This authority was eagerly embraced by the commander in chief Pacific Command (CINCPAC) Adm John S. McCain Jr. In a proposal to the JCS for increased attacks against the North, CINCPAC stated, "The authorities and added resources recently provided to field commanders are most welcome. They are essential to blunting the momentum of the enemy's offensive and will be exploited to the maximum that the tactical situation and resources permit."<sup>9</sup>

Operation Freedom Train and its successor Operation Linebacker were designed to disrupt the North's logistical system, deny operational mobility, and destroy supplies and long-term combat power. Freedom Train started almost immediately after the NVA crossed the DMZ. On 6 April the first Freedom Train strikes were launched against targets in NVN south of the 20th parallel. On 16 April the strike area was expanded with Operation Freedom Porch Bravo. Freedom Porch Bravo was a one-day attack against targets in the vicinity of Hanoi and Haiphong.<sup>10</sup> By 8 May commanders gave approval and resources were in place to commence Operation Linebacker I,

the largest sustained air campaign of the war against NVN. Linebacker I began in earnest on 10 May 1972 and continued for the duration of the NVA offensive.

In the South, airpower was applied against the NVA front-line units. Allied commanders used air attacks to deny tactical mobility and engage the NVA. Often, airpower was alone in bringing fire upon the North Vietnamese because ARVN maneuver and fire support units were pinned down and unable to respond. Airpower pounded the communists both day and night. At times under direction of ground controllers and at times independently, airpower waged a ferocious fight to stop the invasion. The asymmetrical battle of forward air controllers (FAC), gunships, TACAIR, and B-52s against the NVA was a critical portion of the campaign.

By the end of June, the NVA invasion had ended far short of its intended objectives. The North Vietnamese, defeated in the field, were now forced onto the defensive as the South began to counterattack and regained control of Quang Tri. Under attack from the front line in the south to the Chinese border, the North Vietnamese began negotiating in an attempt to salvage what they could from their failed invasion.

### **Air Campaign Phases Related to Maneuver Force Characteristics**

The multiple air operations against the NVA show how airpower gained a position of advantage by attacking North Vietnamese defenses. The interdiction operations and armed reconnaissance missions placed the NVA under a zone of influence. Throughout the theater, aircraft brought the NVA under direct fire. Several examples from the different operations show that airpower did, indeed, demonstrate the characteristics of a maneuver force in the 1972 NVA offensive.

### **Access in the Vertical Flank—Gaining a Position of Advantage**

Both sides understood the position of advantage granted by defending or turning the vertical flank. The NVA sought to protect its vertical flank by denying the allies use of the air. The

allies relied heavily on airpower and therefore battled to maintain freedom of maneuver in the air during every portion of the invasion campaign.

To the NVA, denying the allies use of the air was key to protecting their vulnerable supply lines and fielded forces. The Ho Chi Minh Trail was the vital artery of the NVA supply system. Consequently, it went to great lengths to protect this route during the 1971–72 dry season. The NVA used both passive and active measures to reduce the risk from air attack. The first passive defensive measure was the significant expansion of the network to more than 2,700 miles of all-weather usable road.<sup>11</sup> The NVA also limited nighttime movement and thus denied the Americans use of their high-technology night sensors. Daytime operations posed a greater threat to the more vulnerable USAF air assets such as AC-130 gunships and the slower-moving FACs.<sup>12</sup> To complement its passive measures, the NVA significantly increased active defenses along the trail. For the 1972 invasion, the North increased SAM coverage and established ground control intercept (GCI) stations in the region that allowed interceptor penetrations into Laotian airspace.<sup>13</sup> The IADS also included an estimated 600 to 700 pieces of antiaircraft artillery (AAA), some of which were radar guided.<sup>14</sup> These North Vietnamese defensive measures began to have an adverse effect on the Commando Hunt VII operations. By December 1971, the number of hours of gunship coverage over the northern portion of the trail had decreased by 65 percent.<sup>15</sup> The NVA was doing its best to protect its vital lifeline into the south.

Since the IADS coverage did not cover the South, the NVA also undertook passive and active measures to protect its forces deployed and active in-theater. Once in SVN, the NVA either moved during bad weather or at night. The seemingly ubiquitous presence of TACAIR and FACs made any movement during the day in good weather conditions deadly for the North Vietnamese.<sup>16</sup> Active measures to defend the frontline troops consisted of an overwhelming number of AAA units and the introduction of new systems. For its assault in Military Region (MR) I, the NVA had six AAA regiments and mobile AAA for the armored spearheads. The invasion also saw the use of the SA-7 man-portable SAM in large numbers. This relatively new

system was used to place slower-moving fixed and rotary wing aircraft at greater risk.<sup>17</sup>

The NVA air defense presented the allies with a well-defended flank that had to be turned before it could be exploited. Commander, United States Military Assistance Command, Vietnam (COMUSMACV), Gen Creighton Abrams, understood the significance of the battle for the vertical flank and its relation to the overall campaign. After Operation Proud Deep Alpha, General Abrams made a prediction for the fight to come, "The enemy will use MIGs, SAMs, AAA to complicate our operations. We expect his recently intensified MIG activity to continue and to be directed against our air operations. He is expected to position SAMs and AAA just north of the DMZ, and has already moved these weapons into the Laotian panhandle to counter our operations in these areas. These measures will accompany intensive armor and artillery-supported ground operations against which we must be able to concentrate U.S. and VNAF [Vietnamese Air Force] air power regardless of the hostile air environment."<sup>18</sup>

The USAF took steps to counter every NVA attempt to deny its use of the air. In the Commando Hunt campaign along the Ho Chi Minh Trail, American assets were escorted not only by dedicated combat air patrols but also by dedicated SEAD assets as well. Flights of F-4 Phantoms, acting as escorts, often engaged AAA pieces while gunships attacked trucks. On one such occasion, two AC-130s destroyed 15 trucks while F-4s engaged the AAA.<sup>19</sup> Reactive fighter-bomber strikes worked well against AAA, but to counter SAMs and interceptors a more proactive measure was needed. Consequently, one of the main objectives of Operation Proud Deep Alpha was to roll back SAM coverage and stop interceptor intrusion over Laos by attacking missile batteries and airfields south of the 20th parallel.<sup>20</sup> For the United States to apply pressure over the Ho Chi Minh Trail, it had to be able to operate in the air.

When the North Vietnamese invasion took place, allied airpower had to be able to engage the NVA in all areas, therefore, the SEAD campaign shifted to NVN. The North had been increasing its air defenses since the bombing halt in 1968. To counter the IADS, the USAF used a combination of electronic

countermeasures, its own version of GCI, direct attacks on air defenses, and extensive combat air patrols to escort attacking aircraft.<sup>21</sup> Attacking air defense sites was a top priority.<sup>22</sup> Gen John W. Vogt Jr., Seventh Air Force commander, directed that SAM and AAA sites be vigorously attacked in an effort to keep the NVA off balance and unable to recover. Air action against NVA defenses was also significant in the South. Allied aircraft flew many missions directly targeting the defenses located there in order to gain access over the tactical battle area.<sup>23</sup> US airpower was making a dedicated effort throughout the theater to turn the North Vietnamese vertical flank and gain a position of advantage.

#### **Air Interdiction—Exploiting the Vertical Flank and Exerting a Zone of Influence**

Throughout the invasion, the allies exploited the vertical flank by using airpower to exert a zone of influence over the NVA from the front to Hanoi. Air operations from Commando Hunt VII to attacks in the RVN military regions influenced combat operations throughout the theater. Aircraft targeted roads, rail lines, and bridges in an effort to degrade the North Vietnamese logistics system and restrict troop movements and thus created pressure on the entire enemy system in South East Asia.<sup>24</sup>

The effort to place enemy movements down the Ho Chi Minh Trail under an aerial zone of influence was key to the success of Operation Commando Hunt. The first two phases of the operation were designed to do just that. Phase one emphasized attacks on roads and passes that entered the Ho Chi Minh Trail on the Laotian-North Vietnamese border. Air strikes from B-52s and TACAIR began the operation by striking key mountain passes, which were the starting point for the seasonal NVA movement.<sup>25</sup> Phase two supplemented phase one operations as sensors and reconnaissance determined the North's operation had progressed along the trail. During the second phase, air operations attempted to create "blocking belts" of mines and sensors in an effort to impede traffic, forcing it to congest and present lucrative air targets.<sup>26</sup> These actions were intended to deny or delay the North Vietnamese movement into SVN.

When the North Vietnamese invasion commenced, air operations took on a new intensity. US commanders quickly sought and were given permission to attack targets in NVN. Operations Freedom Train and Linebacker I were expected to extend an airpower zone of influence into NVN and thereby control the flow of supplies into, through, and out of the country. To accomplish this task, the first step of Linebacker I was to mine the North Vietnamese ports. Sixty-seven percent of external supplies entered NVN through ports.<sup>27</sup> By mining the ports, the Americans caused the supplies to move overland by rail from China. The next objective was to cut the rail lines from NVN to China using aircraft armed with laser-guided weapons to hit key bridges. During the campaign, 15 bridges were out on each railroad at any given time. Supplies from China slowed to a trickle and, most importantly, they began to move by road.<sup>28</sup> Road movement was not as efficient as rail or sea movement because it took longer and required more transportation assets to move the same amount of supplies. Longer time in transit meant longer exposure to air attack. The zone of influence exerted over the NVA caused it to rely on supplies already in place, and those were being used at an unprecedented rate. By the end of May, the NVA supplies were becoming inadequate for the continuation of its offensive.<sup>29</sup>

To complement the campaign in the North, allied airpower was used to exert a zone of influence over the NVA operations in the South as well. The most representative example was the use of airpower to enhance the situation in MR I. The fall of Quang Tri placed the defense of MR I in dire straits. The ARVN needed time to regroup and prepare for the defense of Hue. At this juncture, only airpower could deny the NVA the freedom of movement required to exploit its success. To conduct this denial operation, Seventh Air Force applied its airpower "in the most intensive in-country interdiction campaign of the war."<sup>30</sup> TACAIR and B-52 strikes were dispatched to cut roads and destroy bridges. These efforts limited supplies and severely curtailed NVA freedom of movement. NVA forces were channeled into areas that made them lucrative targets for both airpower and naval gunfire.<sup>31</sup> Operations in airpower's zone of influence were costly to the North Vietnamese. By May the NVA could no

longer move large forces in the daylight in MR I.<sup>32</sup> In addition, the North Vietnamese no longer fired their artillery when allied FACs or gunships were present.<sup>33</sup>

In the entire theater of operations, from the Chinese border to SVN, the communist army was forced to operate in the zone of influence of allied airpower. Air attacks on targets from steel railroad bridges to footpaths shaped the movement and operations of the NVA. The NVA was being set up for destruction from the air.

### **Destruction from the Air—Closing with the Enemy and Engaging with Direct Fire**

Access gave airpower a position of advantage. Exploiting that position of advantage extended a zone of influence over the enemy and created the opportunity for airpower to close with the enemy's maneuver units and place them under direct fire. Direct fire from the air rained destruction on the North Vietnamese logistics system and maneuver units throughout the entire theater.

Logistics systems in Laos and NVN were systematically attacked. In Laos the final phase of Commando Hunt VII engaged the NVA as it reached the end of the Ho Chi Minh Trail and entered its storage and assembly areas.<sup>34</sup> FACs, gunships, and airborne communication command and control (ABCCC) aircraft—serving as mission commanders for these engagements—found targets and directed air attacks against them.<sup>35</sup> Poor weather caused lost sorties, but Commando Hunt VII missions were still able to destroy significant amounts of NVA war material. Enemy logistical throughput was at its lowest rate for any dry season subsequent to the start of interdiction in Laos.<sup>36</sup> After the NVA had consumed its pre-positioned stocks, the volume of supplies going down the Ho Chi Minh Trail was insufficient to support a continued offensive.<sup>37</sup>

In the North, Operation Proud Deep Alpha closed with the enemy in the enemy's home territory. The objective was to seek out enemy supplies and destroy them. Attacks against petroleum, oil, and lubricants (POL) sites in NVN over the five-day period from 26 to 30 December 1971 resulted in the destruction of approximately 600,000 gallons of fuel.<sup>38</sup> This loss

constituted nearly 6 percent of NVN's total fuel supply.<sup>39</sup> Destruction operations against the North intensified after the communists crossed the DMZ on 30 March 1972. Attacks during Operation Freedom Porch Bravo on 16 April destroyed 50 percent of the known POL in the Hanoi-Haiphong area.<sup>40</sup> Operation Linebacker continued to take a toll on North Vietnamese POL supplies. On 18 May 1972, USAF fighter-bombers used laser-guided bombs to destroy an estimated 5.5 million gallons of fuel just three and one-half miles northeast of Hanoi. On 9 June, fighter-bombers ranged the entire length of NVN hitting POL sites, warehouses, and storage areas.<sup>41</sup> The entire North Vietnamese logistic support for its offensive was under direct fire from the air.

North Vietnamese fielded forces also suffered greatly from direct contact with air units. Airpower actually placed the NVA maneuver elements under direct fire before the start of the offensive. Informed by intelligence reports and reconnaissance of the area, Admiral McCain directed a maximum effort against the B-3 front opposite the Central Highlands.<sup>42</sup> The aerial spoiling attack against the anticipated offensive began on 11 February 1972. Airpower was applied against detected and suspected troop positions.<sup>43</sup> While detailed results are not known, it is clear that the spoiling attack did have an effect. NVA prisoners confirmed that the timetable for the B-3 front had been set back by terrible losses due to air attack. The actual timing of the offensive in the Central Highlands substantiates this claim. Probing attacks by significant NVA forces did not begin until two weeks after the offensives in MRs I and III. The main drive on Kontum did not occur until late May.<sup>44</sup> The attacks against the B-3 front had spoiled the NVA's offensive plans.<sup>45</sup>

The use of airpower to close with the enemy and place him under direct fire was a significant factor in battles in each military region. By entering into direct combat with NVA forces, airpower acted as a covering force, conducted counterattacks, and went on the offensive. Airpower did what the South Vietnamese ground troops had difficulty doing—maneuver against the NVA.

The initial power of the NVA offensive caused the South Vietnamese troops to retreat in nearly every contact. By the end of



April, it appeared that defenses in MR I and MR II might collapse altogether. The South Vietnamese forces in MR III were in no better shape, not retreating only because they were encircled in An Loc. Airpower was needed to act as a covering force to give the ARVN time to regroup and prepare better defenses. There are numerous examples of airpower filling this role. One such case took place during the ARVN withdrawal from Quang Tri. USAF FACs maintained contact with retreating columns and directed TACAIR strikes against pursuing forces.<sup>46</sup> South Vietnamese Gen Ngo Quang Truong credited airpower with denying battle following the loss of Quang Tri and giving his forces time to prepare for the defense of Hue.<sup>47</sup> Air attacks also allowed encircled units to be rescued. More than 130 South Vietnamese troops and their US advisors were evacuated from the Citadel in Quang Tri City after being surrounded by the NVA. Air attacks continually "covered" the encircled defenders until helicopters could be brought in to extract the beleaguered defenders.<sup>48</sup> In MR II the air covering force allowed the ARVN to withdraw to Kontum. Air attacks against the advancing NVA caused severe damage and delay. The extra time and boost to morale was what the South Vietnamese soldiers needed to prepare for the defense of Kontum. Throughout SVN, airpower gave the ARVN time to catch its breath and deny the NVA accomplishment of its objectives.

While the ARVN units were regrouping, airpower was the only significant counterattack force available to the allies. In each military region, NVA thrusts were met with heavy counterattacks from the air. On 18 April, one such attack stopped an assault on Quang Tri City. Massed US TACAIR and B-52 strikes disrupted an NVA armor assault.<sup>49</sup> The NVA attempt to take the city would continue to be foiled by counterattacks from the vertical flank. Another example took place on the night of 28 April. The North Vietnamese launched a combined assault against a bridge leading into the city. The ARVN defenders fell back to the south side of the river. If the bridge were lost, the NVA would be able to overrun the remaining defenses. At a critical moment, a FAC controlled TACAIR struck against the lead elements. All five tanks were destroyed and the assault repelled, saving Quang Tri City for several more

days.<sup>50</sup> Eventually the NVA mass overcame the South Vietnamese defenders and Quang Tri City was evacuated. The North Vietnamese, however, had suffered horrendous losses.

The story was the same for the other military regions. NVA prisoner of war reports from the battle for Kontum described how B-52 and TACAIR strikes had broken their assaults. A prisoner from the 28th NVA regiment assigned to take Kontum claimed that his battalion had suffered such heavy losses from B-52s on the night of 18 May that they could not continue their attack. Another aspect of airpower made its presence felt in this battle.<sup>51</sup> US Army attack helicopters armed with antiarmor missiles were an excellent complement to the USAF jets. In one attack on 14 May, Army helicopters accounted for 10 tanks, significantly helping to break the NVA attack.

The battle for An Loc in Military Region III also had excellent examples of a counterattack from the air. The North Vietnamese first wanted to take An Loc by storming the city. Each attempt was blunted by the massive use of airpower and determined ARVN defenders. Captured documents revealed the enemy attributed their failure to take the city on losses due to air strikes. More than two divisions were mauled in their attempt to take the city.<sup>52</sup> By mid-May, the communists resigned themselves to taking An Loc by siege.

Airpower, by closing with the enemy, acted in an offensive, proactive manner. Allied aircraft sought out and destroyed communist combat power across the theater. FACs and gunships waged independent air operations against NVA heavy artillery and armor. Acting as scouts and aerial maneuver commanders, aircrews in OV-10s, O-2s, AC-130s, and even F-4s roamed assigned territory finding targets and coordinating for their destruction.<sup>53</sup> These forces were given mission-type orders to engage the NVA. F-4s ranged into NVN and more heavily defended areas of MR I, while OV-10s, O-2s, and gunships operated closer to friendly lines where air defenses were not as strong.<sup>54</sup> The close battle for the NVA took place wherever FACs were flying as well as where ground troops faced each other. A running battle between American aircraft and North Vietnamese armor during the defense of Hue exemplifies this asymmetrical contest. A USAF FAC on a reconnaissance patrol

spotted a column of enemy armor and directed a flight of orbiting F-4s to engage. The ensuing strike destroyed 10 tanks. As the battle continued, another flight of F-4s on an armed reconnaissance mission destroyed 11 tanks and damaged 12 more. Air action stopped the armor threat giving the South Vietnamese defenders time to dig in. These aerial tactics, repeated in every military region, proved deadly for the North Vietnamese. An estimated 422 NVA tanks were destroyed by air as of 1 June 1972.<sup>55</sup> Pacific Air Forces estimated that one-half of the North Vietnamese invading force casualties were attributed to air strikes.<sup>56</sup>

In analyzing airpower's role in repelling the invasion, it is important to note that it did not operate alone. ARVN units were major contributors to stopping the North Vietnamese. The presence of ARVN units fixed the NVA and was critical to the defense of the South. After their initial setbacks, South Vietnamese units regrouped, dug in, and blocked the communist troops. Even when retreating, the mere presence of ARVN troops forced the NVA to react to their presence making it more susceptible to air attacks. Neither airpower nor ground troops stopped the North Vietnamese alone. The combination of the two, however, was the key to success.

### **Summary**

Airpower played a critical role in stopping the North Vietnamese invasion of 1972. By performing maneuver force functions, airpower was able to operate in true combined arms fashion with South Vietnamese defenders. Given the static nature of most ARVN divisions, this was essential. Airpower was essentially the only mobile operational force in the campaign and therefore acted as the theater reserve. It is important to realize that the only US reinforcements sent to SVN to repel the invasion were aircraft and the personnel to fix and support them. The combination of air and ground maneuver forces worked well and stopped the North Vietnamese invaders. Outside of SVN, however, aircraft bore the brunt of combat action against the North Vietnamese. Throughout the theater, airpower performed all of the maneuver force functions. Air at-

tacks on NVA defenses gave the allies a position of advantage that was exploited by placing a zone of influence over the entire theater. Masses of fighters, bombers, and gunships closed to contact with all elements of NVA power from logistics sites to frontline combat formations and placed them under direct fire. The evidence suggests that in the North Vietnamese invasion of 1972, as in the Yom Kippur War, airpower demonstrated all the classic maneuver functions.

### Notes

1. Sir Robert Thompson, *Peace Is Not at Hand* (New York: McKay, 1974), 84-94.
2. Headquarters Pacific Air Forces (PACAF), *A Project Corona Harvest Study, USAF Operations in Defense of South Vietnam, 1 July 1971-30 June 1972* (Headquarters PACAF, 1973), 9.
3. Thompson, 82-96.
4. Herman L. Gilster, *The Air War in Southeast Asia: Case Studies of Selected Campaigns* (Maxwell Air Force Base, Ala.: Air University Press, 1993), 18-20.
5. Melvin F. Porter, *Project CHECO Southeast Asia Report, Proud Deep Alpha* (Headquarters PACAF, 1973), 3-4.
6. The term TACAIR refers to fighter-bomber operations including such assets as F-4s, F-105s, A-1s, et cetera.
7. PACAF, *Corona Harvest*, 59.
8. Ngo Quang Truong, *The Easter Offensive of 1972*, Indochina Refugee Authored Monograph Program (Washington, D.C.: US Army Center of Military History, 1977); and Dale Andradé, *Trial by Fire: The 1972 Easter Offensive, America's Last Vietnam Battle* (New York: Hippocrene Books, 1994). Truong and Andradé provide a complete history of the invasion.
9. Melvin F. Porter, *Project CHECO Linebacker: Overview of the First 120 Days* (Headquarters PACAF, 1973), 15.
10. *Ibid.*, 13.
11. Jack S. Ballard, *The Development and Employment of Fixed-Wing Gunships 1962-1972*, The United States Air Force in Southeast Asia series (Washington, D.C.: Office of Air Force History [OAFH], 1982), 228.
12. PACAF, *Corona Harvest*, 38.
13. *Ibid.*, 22.
14. Gilster, 18.
15. PACAF, *Corona Harvest*, 34.
16. Capt David K. Mann, *Project CHECO 1972 Invasion of Military Region I: Fall of Quang Tri and Defense of Hue* (Headquarters PACAF, 1973), 26.
17. *Ibid.*, 5.
18. PACAF, *Corona Harvest*, 12-13.
19. Ballard, 232.
20. Porter, *Project CHECO Southeast Asia Report*, 2-3.
21. Porter, *Project CHECO Linebacker*, 44-46.
22. *Ibid.*, 10.

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23. PACAF, *Corona Harvest*, 115.
24. Ibid., 13.
25. Ibid., 23.
26. Ibid., 24.
27. Porter, *Project CHECO Linebacker*, 28.
28. Ibid., 25.
29. Ibid., 32.
30. Mann, 57.
31. Ibid., 58.
32. Eduard M. Mark, *Aerial Interdiction: Air Power and the Land Battle in Three American Wars* (Washington, D.C.: Center for Air Force History, 1994), 397.
33. Mann, 60.
34. PACAF, *Corona Harvest*, 25.
35. Ibid., 27.
36. Gilster, 23.
37. Ibid., 27.
38. Porter, *Project CHECO Southeast Asia Report*, 45.
39. Ibid., 50.
40. Porter, *Project CHECO Linebacker*, 13.
41. Ibid., 35-37.
42. PACAF, *Corona Harvest*, 47.
43. Truong, 81-82.
44. Ibid., 85.
45. Capt Peter A. W. Liebchen, *Project CHECO Kontum: Battle for the Central Highlands 30 March-10 June 1972* (Headquarters PACAF, 1972), 8.
46. Mann, 48.
47. Truong, 54-55.
48. Mann, 45-48.
49. Truong, 38-39.
50. A. J. C. Lavalle, *Airpower and the 1972 Spring Invasion*, vol. 2, monograph 3, USAF Southeast Asia Monograph series (Washington, D.C.: OAFH, 1985), 49.
51. Liebchen, 48.
52. Maj Paul T. Ringenbach, *Project CHECO, The Battle for An Loc 5 April-26 June 1972* (Headquarters PACAF, 1973), 21; and Truong, 123-30.
53. Lavalle, 53-54.
54. Mann, 34-38.
55. PACAF, *Corona Harvest*, 97.
56. Ibid., 2.

## Chapter 5

### **Normandy Campaign**

*Our friends from the East cannot imagine what they're in for here.*

—Generalfeldmarschall Erwin Rommel

In both Vietnam and the Middle East, airpower acted as a maneuver force. What can be said about the use of air forces in prior conflicts? Are airpower's maneuver force characteristics merely a function of modern weaponry such as PGMs, or are they inherent airpower characteristics? This third case study examines Allied use of airpower toward the end of World War II. More than any other campaign of the war, the Allied invasion of France required the careful integration of air and ground forces. Airpower in Normandy represented a newly perfected form of combined arms warfare. The Allied powers had taken the lessons of previous campaigns and established the coequality of air and ground forces. During the six months prior to the invasion, the Allies had gained a position of advantage over France by breaking the Luftwaffe's back. German commanders realized that the forces earmarked for the mobile defense of the French coast were under a zone of influence of Allied airpower. The Allies planned to use their aerial advantage to deny battle while they built sufficient combat power to destroy the Germans in France. In fact, they would have to use airpower to close with the enemy and secure their bridgehead. Thus, the Allies used airpower as an integral part of their cross-channel attack. For the Germans, airpower was a problem. For the Allies, however, it was a solution.

### **Overview**

The invasion of Normandy was a critical turning point in World War II. The sight of hundreds of assault boats churning toward the French coast is perhaps the most enduring image of the war. Five Allied divisions stormed ashore on the same number of

beaches. These troops were to drive inland and link up with three airborne divisions dropped on the previous night. The combined navies of the Allied powers formed a barrier that stretched from England to France through which no German surface or subsurface asset could penetrate. The armada at sea was complemented by an armada in the air. The operation took place under an umbrella of airpower and naval gunfire. Unable to challenge the massed Allied airpower, the Luftwaffe was nowhere to be found. The only thing standing in the way of a successful Allied lodgment was German reinforcements, and many of them began to move the day of the invasion. Both sides embarked upon a desperate race to concentrate combat power at the Normandy beaches. Beginning on the afternoon of 6 June 1944, the Germans attempted to counterattack. The Allies continued to secure their bridgehead. The struggle for the beachhead continued until 12 June when it became apparent that the Allied forces were on the Continent to stay. For the Germans, the successful Allied invasion denied their last hope of conducting a successful defense in the west.

### **Maneuver Force Characteristics of Allied Airpower**

To understand the effect of airpower in the battle for Normandy, it is necessary to examine the operational problem presented to both the Germans and the Allies. The dynamics of airpower forced both sides to consider its effect on the operational situation. For the Germans, Allied airpower was a factor in the placement and use of their mobile reserves. For the Allies, airpower bought time needed to build up the necessary combat forces. The use of airpower thus became a central theme in the plans of both sides.

#### **Gaining a Position of Advantage—Air Battle to Destroy the Luftwaffe**

From the initial stages of operational planning, Gen Dwight D. Eisenhower, Supreme Commander Allied Expeditionary Force, considered a favorable air situation a prerequisite for the cross-channel attack. The size of the assault

force and the concentrated area of the proposed bridgehead made freedom from air attack imperative. Action by a robust Luftwaffe could severely hinder or defeat the lodgment of the Allied armies. Eisenhower needed Allied airpower to delay the German mobile reserves, thus denying ground battle with them until he had sufficient forces ashore to conduct a successful defense. The Allies had to be free to conduct air attacks in order to ensure the success of the invasion. Eisenhower thus had to protect his vertical flank while turning the enemy's, but Germany's vertical flank over France was protected by its own airpower. The Allies thus had to defeat the Luftwaffe in order to turn the vertical flank and gain a position of advantage.<sup>1</sup>

To battle the Luftwaffe, Army Air Forces (AAF) planners developed Operation Argument, a maximum effort targeting the Luftwaffe's production facilities, including key airframe and final assembly facilities of single and twin-engine fighters.<sup>2</sup> They also targeted antifriction bearing facilities because they believed they were vulnerable. The Allies calculated that the destruction of these target groups would reduce frontline fighter strength more rapidly than others previously attacked. Allied leaders hoped that Operation Argument would overcome past failures by taking advantage of increased numbers, coordinated attack, and tactics that utilized long-range escorts. Simultaneous daylight raids by Eighth Air Force from England and Fifteenth Air Force from Italy would be coordinated with RAF Bomber Command night attacks in an effort to overwhelm German defenders.<sup>3</sup>

Gen Henry H. "Hap" Arnold left no doubt that the Luftwaffe was the target of Operation Argument. In a New Year's message, he stated that his number one priority was to "destroy the enemy air force where ever you find them, in the air, on the ground, and in the factories."<sup>4</sup> Allied airpower answered the call in short order. On 20 February 1944, Eighth Air Force officially kicked off Operation Argument—or Big Week as it came to be known—with the first thousand-plane raid directed against 12 specific German targets. For the next six days, thousands of young men conducted a significant struggle in the air from the North Sea to the Alps. The Luftwaffe resisted



with great intensity but faced Allied bomber crews in relentless pursuit of their objectives.<sup>5</sup> In addition to the heavy bombers pounding their infrastructure, the Germans had a new reason for concern. Allied air leaders had unleashed roving fighter squadrons on the Third Reich. Not only were their production facilities being smashed but also now their air force was hunted in its own home. Defeat was on the horizon for the once mighty Luftwaffe.

Operation Argument was a success. German airpower suffered a severe blow from which it would not recover.<sup>6</sup> Argument broke the Luftwaffe by killing German pilots and creating a "bubble" in fighter production. The success of Allied air operations forced the Germans to divert valuable resources away from the front for defense of the Reich. The first step in the Allied campaign to gain an aerial position of advantage was complete. The correlation of air forces would never again favor the Third Reich.

Allied bombing caused a two-month delay in production due to the physical destruction of facilities and the German need to disperse.<sup>7</sup> German officials concluded that output for March would be 50 percent below predicted levels.<sup>8</sup> This loss caused the Germans to reorganize and disperse their production efforts, which resulted in further delays and made them more vulnerable to the forthcoming attacks on transportation.<sup>9</sup> Although the Germans would eventually recover from their production losses, they would not recover from their aircrew losses. The lack of sufficient numbers of trained fighter pilots had become the key vulnerability of German airpower. The Luftwaffe lost almost 20 percent of its fighter pilots including several high-scoring aces during the battle.<sup>10</sup> By May 1944 the Germans had lost almost 100 percent of the aircrew strength present for duty on 31 December 1943.<sup>11</sup> From Big Week on, the Luftwaffe was on the defensive.

The Germans were not ready, however, to accept defeat in 1944. They fought to regain control of the air by pouring an ever-increasing portion of their resources into air defense. This effort consumed immense war material and manpower that the Germans could have employed elsewhere. In 1942, 60 percent of German aviation production supported offensive

operations. By 1944, 82 percent of production was used to build defensive airpower. Overall, 40 percent of Germany's total war production went to creating and sustaining its defensive air arm.<sup>12</sup> The Allies had thus succeeded in gaining a position of advantage for the coming invasion. This advantage would prove to have dire consequences for the Germans. During the defense of France in 1944, the German army would be forced to fight in two directions—to the front and to the sky. The destruction of the Luftwaffe had left the Wehrmacht's vertical flank exposed and German ground formations would suffer the consequences.

### **Zone of Influence—Controlling Normandy with Airpower**

Defeat of the Luftwaffe by the spring of 1944 left the German forces in France open to air attack. German leaders, however, disagreed on what this meant for their defense. The German operational objective was to defeat any Allied landing on German-occupied territory. By late 1943, the German High Command generally accepted that given the German naval and air force's inability to interfere, an Allied invasion force would reach the Continent. Some German generals, therefore, believed it necessary to defeat the invasion quickly before the Allies could assemble their massive numbers of men and equipment.<sup>13</sup> Adolf Hitler—agreeing with this thought—issued Directive No. 51 stating, “should the enemy nevertheless force a landing by concentrating his armed might, he must be hit by the full fury of our counterattack.”<sup>14</sup> How to conduct this counterattack in the face of the Allied air zone of influence became a point of contention between German commanders. The months preceding the invasion saw a debate at the highest levels. The debate arose due to the fact that the majority of German generals did not yet realize that Allied airpower could severely complicate their way of war.

Military leaders such as *Generalfeldmarschall* Gerd von Rundstedt, *General der Panzertruppen* Leo Freiherr Geyr von Schweppenburg (commander in chief Panzer Group West), and *Generaloberst* Heinz Guderian argued for the traditional German way of war. These commanders envisioned a defense

of France that was steeped in lessons learned from the eastern front and the concepts of mobile warfare. The basic premise was to maintain a thin crust along the coast and hold a mobile reserve in the rear to counterattack any penetrations and thereby drive the invaders into the sea. Von Rundstedt and Geyr anticipated the decisive battle would take place somewhere between the coast and the area northwest of Paris between the Seine and Loire rivers.<sup>15</sup> The anticipated location of this battle dictated the placement of the operational reserves. This operational reserve was to be held inland away from the main striking power of the Allied effort offering a degree of protection and allowing flexibility in countering a variety of invasion scenarios. Panzer reserve forces could easily be directed to the main invasion area, whatever its location.<sup>16</sup> The flaw in this thinking came from the fact that these battle-hardened generals had gained their experience on the eastern front and did not appreciate how vulnerable their mobile formations would be to Allied air attack. While Rundstedt, Geyr, and Guderian thought Allied air would be a complicating factor, they reasoned it could be overcome by moving at night.<sup>17</sup> To these generals, the German form of mobile warfare could again be implemented even in the face of enemy airpower.<sup>18</sup>

The man Hitler had personally tasked for the defense of France, *Generalfeldmarschall* Erwin Rommel, disagreed with this position. Rommel would have preferred to conduct mobile operations as others planned, but reasoned that they were impossible given Allied air superiority.<sup>19</sup> The Desert Fox's experience fighting the Western Allies had convinced him that using massed armor was impossible and, therefore, the tactics of mobile defense—which had been so successful on the eastern front—would prove ineffective. He concluded that the Allies would have to be defeated at the water's edge within the first 48 hours of the invasion.<sup>20</sup> Rommel believed that units deployed outside of a 48-hour range would be ineffectual during the decisive stage of the landings. He also argued that "British and American superiority in the air alone [had] again and again been so effective that all movement of major formations [had been] rendered impossible both at the front and behind

it, by day and by night."<sup>21</sup> He was convinced that the coastal defenses would be penetrated, and thus von Rundstedt's concept would leave the reserves and would be too far away to counterattack. The Allies would be able to build their combat strength under an air umbrella and strike out at will. Rommel's solution placed the operational reserves close to the beaches so that they could counterattack virtually as the Allies landed.<sup>22</sup> He saw no alternative to this plan because he considered the time and place of landing to be the weakest juncture of the campaign for the Allies, given their limitations in sea transport.<sup>23</sup> The argument between Rommel and von Rundstedt was never completely resolved prior to 6 June 1944. As a result, neither method was truly adopted leaving the mobile reserves smaller than von Rundstedt desired and not as concentrated near the coast as Rommel wanted.<sup>24</sup>

The weight of Allied airpower was about to affect German mobility significantly. While it is not clear which operational concept would have been more effective, some evidence emerges from the campaign itself. In the one area in which Rommel was able to move a frontline division to the coast, the Allies had the toughest landing. The unit was the 352d Infantry Division that defended the area known to the Americans as Omaha Beach.<sup>25</sup> The Allies suffered their worst casualties there and were fortunate that no German armor counterattacked while the assault foundered. In retrospect, one of Rommel's strongest critics changed his position on the effect of Allied air. After having seen his armored forces destroyed from the air and being relieved of command in July, conceded that Rommel had been right.<sup>26</sup> Geyr and others to follow finally learned that airpower's zone of influence had changed their way of war.

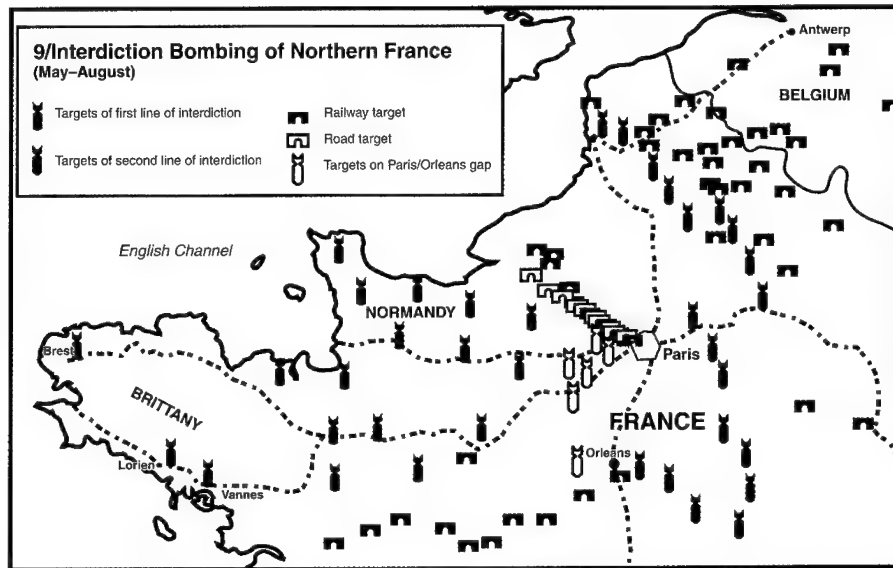
### **Denying Battle to the Enemy—The Plan to Use Air to Secure the Lodgment**

On the other side of the channel, the Allies were considering their operational problem. The Allied invasion effort rested on the ability to do two things: first, conduct a successful assault on the beaches; and second, build up combat power in the lodgment area faster than the Germans.

Eisenhower emphasized the second when he stated, "the crux of the operation will be our ability to land forces quickly enough, first, to hold the initial German counterattack, and then to defeat and drive off the large German reserves which will be brought in against our bridgehead."<sup>27</sup> The Allies simply had to delay German reinforcements. To do so, they planned to use deception, the French resistance, and airpower. The deception effort was designed to conceal Normandy as the true invasion site and thus pin German units in the Pas-de-Calais area. When the Germans realized the invasion location, the French resistance would be instrumental in slowing Wehrmacht formations. Airpower would create an interdiction zone that would also impede German movement into the battle area. Allied leaders hoped air attack would deny the Germans the ability to give battle on their terms and provide the time needed to build their own combat forces. Allied planners were counting on airpower to deny battle to the German mobile reserves long enough to allow them to defend the lodgment.

The Allies knew that German land warfare doctrine emphasized the mobile defense. This implied a concentrated counterattack as soon as the Germans determined the location of the main attack. To succeed, the Allies would have to deny battle to the Germans while both sides raced to build combat power at the invasion site. The winner of the race would be the victor in the campaign.<sup>28</sup> The Allies based their prospects of success on a comparison of their deployment rates with those of the Germans. This comparison revealed two critical periods when German forces would be sufficient to counterattack: within the first 48 hours and again at D plus seven.<sup>29</sup>

Gen Sir Bernard L. Montgomery, commander of Allied Ground Forces for the invasion, considered these two time periods to be critical.<sup>30</sup> Airpower—applied against LOCs and against combat units themselves—could slow German buildup and even the odds at these two critical junctures. Allied planners noted that, "only through airpower can we offset the many and great disabilities inherent in the situation confronting the attacking surface forces."<sup>31</sup> Montgomery agreed. He said, "air must hold the ring."<sup>32</sup>



Normandy Air Campaign Area

### Closing with the Germans—Direct Fire from Marauding Air

Allied tactical air forces were also ready to engage German ground units directly. The Allies had developed a method of employment that would allow their tactical air force to reach its full potential. This method of employment would prove its worth on D plus two and D plus six by disrupting German attempts to counterattack into the lodgment area. This use of airpower gave the Allies the edge required to stay on the Continent in spite of German potential numerical superiority in the beachhead.

**Method of Employment.** During the Normandy campaign, the Allied air effort directed against German ground units consisted primarily of two mission types, close support and armed reconnaissance.<sup>33</sup> Close support missions worked directly with controllers on the ground and were in direct support of the ground commander. Armed reconnaissance missions involved groups of aircraft hunting and killing mobile German formations beyond friendly lines at the tasked air comman-

der's discretion. Based on intelligence reports, senior air commanders issued field orders assigning fighter groups specific areas of responsibility (AOR). The field orders directed the air units to cover their AOR, usually a series of roads for a specific time. The group commander was the controlling authority for mission planning and execution. He determined the size of the force, ordnance loads, and tactics required to accomplish the mission and informed higher headquarters of specifics for integration into an overall flying plan.<sup>34</sup> During execution, air units patrolled the French countryside at four thousand to six thousand feet above the ground and attacked any German targets of opportunity.<sup>35</sup> Armed reconnaissance missions comprised 85 percent of the entire fighter-bomber effort during the campaign, with CAS accounting for the remaining 15 percent.<sup>36</sup> Now the fighter-bomber as well as ground forces would close with the enemy and engage with direct fire.

**D Plus 48 Hours.** When dawn broke on the morning of 7 June, the invasion force was ashore; and the time had come for each side to pit its operational plan against the other. German forces were moving toward the coast. These movements had ominous importance for the assault units that had fought their way across the beaches the previous day. For the Allies, not all had gone as planned. Despite getting ashore, the assault forces lacked most of their heavy weapons, artillery, and armor. The beaches were still under fire, which reduced the chances of swift reinforcement and supply.<sup>37</sup> US forces in particular were well behind. Only one-half of the scheduled fourteen thousand vehicles and twenty thousand troops were ashore. V Corps—which had suffered badly at the hands of the 352d Infantry Division on Omaha Beach—had only 100 tons out of an expected 2,400 tons of supply.<sup>38</sup> The limited supply situation was hampered by the fact that V Corps's foothold was only 1.5 miles deep and had only one clear exit from the shore.<sup>39</sup> British forces were not much better off. Although their landing was nearly on schedule, they were already suffering from determined German action. Airpower was the only combat force available at planned levels and would have to buy time for the ground forces to become established.<sup>40</sup> The Ger-

man tanks were coming, and they intended to drive the Allied land forces into the sea. The battle between the Allied Expeditionary Air Force and the German army would test the ability of airpower to have a direct effect on the land battle.

The Germans began moving elements of their armored reserve toward the landing areas early on the morning of 6 June aided by the cover of poor weather. Executing its operational plan, the German Seventh Army was preparing to move the 21st Panzer, 12th SS Panzer, and Panzer Lehr divisions forward. However, higher headquarters had to release operational control of these units to Seventh Army before they could move. They released the 21st at 0500 on 6 June, with the initial objective to attack and destroy British paratroopers east of the Orne River. But, as the amphibious landings unfolded, this unit was diverted through Caen. This diversion caused a delay that gave the weather time to clear and allowed air attacks to compound the situation.<sup>41</sup> Elements of the 21st reached the coast but were unable to capitalize on their efforts due to timely airborne reinforcements in the British sector. The tanks withdrew to their starting points in the hopes of reattempting the action on the next day in cooperation with other armor units.

While the 12th SS Panzer and Panzer Lehr were eager to join the 21st in battle, they were not released until 1600 hours on the afternoon of 6 June. By this time, however, Allied fighter-bombers—taking advantage of the improved weather conditions—were out in force and taking their toll. Consequently, the movement of these two divisions was halted until dark. As the sun set, the stage was being set for a significant engagement on the following day. The Germans estimated they would have a three division striking force in place on 7 June that would smash its way to the sea.<sup>42</sup> The Allies counted on their airpower to prevent this from happening.

On the other side of the channel, airmen were diligently planning to engage the German forces before they contacted friendly troops. This action entailed going out beyond friendly lines, finding their own targets, and attacking at their own discretion. To accomplish this task, Allied air commanders issued mission-type orders sending squadrons on armed recon-



naissance assignments along likely avenues of approach south of the Allied bridgehead. The field orders given to the 366th Fighter Group were typical of those issued for operations on 7 June: "this command conducts armed recce, cuts rail road lines, attacks targets of opportunity and destroys E/A (enemy aircraft)." Thus the 366th was ordered to fly armed reconnaissance missions south of Omaha Beach from 0600 to 2200 hours in an effort to relieve the pressure on the US V Corps. The group launched formations of 16 P-47s 13 times on 7 June. Each aircraft was armed with two 500-pound (lb) bombs and a full load of 50-caliber ammunition. Squadron-sized units hunted and attacked the advancing German armor. The 366th and other air units were taking the close battle to the mobile German formations long before they could encounter Allied ground troops.<sup>43</sup>

By the end of the day on 7 June, the first crisis had passed. The Ninth Air Force alone had flown 467 fighter-bomber sorties on 35 missions. Although the Germans had captured both the US V and VII Corps field orders for the first phase of the invasion, they were in no condition to counter the American operations. German units that managed to reach the front could only be committed in small packets. Any large assembly of combat power was hit from the air almost instantly.<sup>44</sup> Air attacks were so pervasive that Maj Gen Fritz Bayerlein, commander of the Panzer Lehr Division, labeled a stretch of road his unit traveled as a "Jabo Rennstrecke" or "fighter-bomber racetrack."<sup>45</sup> Consequently, most German combat formations were only capable of assuming a defensive posture. The Germans understood air would be a factor; however, never in their most pessimistic views did they realize its actual impact.<sup>46</sup>

**D Plus Six.** Despite the situation, the Germans were not through trying to push the Allies back. In an attempt to keep the Americans from linking Omaha and Utah Beaches, the German 6th Parachute Regiment, in conjunction with the 17th SS Panzer Grenadier Division (PGD), planned an attack against the boundary between the US V and VII Corps. The objective of this attack was to keep the Americans from taking the town of Carentan. Rommel considered holding Carentan

essential to stopping the linkup of the two American corps and ordered his units in.<sup>47</sup>

The battle with the 17th SS PGD is an excellent example of independent air action against German fielded forces. American intelligence sources started reporting elements of the 17th SS PGD moving up on 10 June. Air attacks had already significantly delayed the 17th SS PGD in its effort to cross the Seine.<sup>48</sup> Air commanders in England received a situation report at 0130 hours on the 12th that stated, "17th SS Pz Gren Div area N of Caumont with Recce elements probably towards Carentan."<sup>49</sup> The Allied command immediately drafted field orders that pitted Ninth Air Force against the unfortunate German division.

The Ninth Air Force staff quickly developed a plan to engage the counterattacking German unit. Ninth Air Force directed IX Fighter Command to "conduct Armed Recce on highway net Valognes-Bricquebec, Armed Recce La Haye du Puits-Countance, Granville-Villedieu-Merigny (except Carentan), Armed Recce on roads Saint-Lô-Caumont-Vire-Villedieu." Carentan was excluded because American forces were moving into the town. The order further stated, "one group per armed recce set. Attack targets discretion of CC IX Fighter Command."<sup>50</sup> IX Fighter Command passed the orders on to Advanced Headquarters IX Fighter Command, which added the following statement to the original order: "this command conducts armed recces, cuts RR lines, attacks targets of opportunity and destroys Enemy Aircraft E/A."<sup>51</sup> In accordance with this order, two fighter groups, the 404th and the 405th, were assigned missions in the area thought to contain the 17th SS PGD. Both group commanders had discretion in conduct of their attacks. The fighter groups decided to attack in squadron strength of 16 P-47s each with three 500 lb bombs. They planned to operate for the entire day.<sup>52</sup>

Throughout 12 June, the 404th and 405th flew sorties against the 17th SS PGD. Their attacks had significantly retarded the division's counterattack. Both groups claimed excellent results, citing convoys and troop concentrations attacked. Intelligence summaries for the morning of 12 June showed that the fighter-bombers had indeed engaged the 17th

SS PGD.<sup>53</sup> On one mission, the division's assault guns were hit in a marshalling area prior to the advance. This loss caused the 17th SS to stop and postpone its attack until 13 June.<sup>54</sup> On that day, in response to V Corps's advance on its flank, the roughly handled division was forced to stop its attack. The 17th SS went into defensive positions, as did the Americans. Both sides remained in place until July. Montgomery's second critical period had passed.<sup>55</sup> The Germans had been unable to conduct their planned mobile defense against the Allied invasion. Almost every German effort to move against Allied land forces had been struck from their exposed vertical flank. Air had held the ring.

### Summary

The hopelessness of the German position became apparent as the campaign unfolded. Allied air units operating as co-equal forces in both command relationships and combat application stopped the Germans from executing their mobile defensive war. The fury of direct fire from the air made northwestern France a h--- for German units to such an extent that they could no longer move during daylight except in poor weather. Combat attrition came from the front, the flank, and now the sky. German units were under attack *across the entire operations area*, not just in the zone of contact. German combat forces were forced to deal with two maneuver forces, one from the ground and one from the air. Perhaps the overall effect of Allied airpower in Normandy is best summarized in an interrogation of von Rundstedt on 20 May 1945. The report stated, "The fighter-bomber operations against road traffic played a major part in the success of the invasion operations and the subsequent break-out. German troop movements and supply traffic were greatly hampered. The effect of the operations on German mobility was devastating. Again, an added number of fully supplied German divisions would have had no compensating effect. They would have added to the difficulty by increasing the congestion on the roads."<sup>56</sup> Even over the battlefields of France in 1944, airpower had operated as a maneuver force despite its relative "youth."

### Notes

1. Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II*, vol. 3, *Europe: Argument to V-E Day, January 1944 to May 1945* (1951; new imprint, Washington, D.C.: Office of Air Force History [OAFH], 1983), 69.
2. Haywood S. Hansell, *The Air Plan That Defeated Hitler* (Atlanta: Higgins-McArthur/Longino & Porter, 1972), 180.
3. Craven and Cate, 30.
4. *Ibid.*, 8.
5. *Ibid.*, 41-42.
6. Hansell, 183-84.
7. Richard G. Davis, *Carl A. Spaatz and the Air War in Europe* (Washington, D.C.: OAFH, 1993), 323.
8. Cajus Becker, *The Luftwaffe Diaries*, ed. and trans. Frank Ziegler (Garden City, N.Y.: Doubleday, 1968), 348.
9. Craven and Cate, 45.
10. Williamson Murray, *Luftwaffe* (Baltimore: Nautical and Aviation Publishing Co., 1985), 229.
11. *Ibid.*, 262.
12. R. Cargill Hall, ed., *Case Studies in Strategic Bombardment* (Washington, D.C.: Air Force History and Museums Program, 1998), 237.
13. Gordon A. Harrison, *Cross-Channel Attack* (Washington, D.C.: Office of the Chief of Military History Department of the Army, 1951), 231.
14. *Ibid.*, 464.
15. Robert J. Kershaw, *D-day: Piercing the Atlantic Wall* (Annapolis: Naval Institute Press, 1994), 22.
16. Heinz Guderian, *Panzer Leader*, trans. Constantine Fitzgibbon (New York: Ballantine Books, 1957), 261.
17. *Ibid.*
18. *Ibid.*, 263.
19. Harrison, 253.
20. *Ibid.*, 249.
21. Erwin Rommel and B. H. Liddell Hart, eds., *The Rommel Papers* (New York: Harcourt Brace Jovanovich, 1953), 455.
22. *Ibid.*, 454.
23. Harrison, 253.
24. *Ibid.*, 258.
25. *Ibid.*, 254.
26. Rommel and Liddell Hart, 467.
27. Harrison, 74.
28. Kershaw, 18.
29. Harrison, 175-76.
30. Kershaw, 35.
31. Harrison, 76.
32. Kershaw, 38.
33. Note: There was some discussion among AAF personnel about the terms to be used to describe air missions. The term *close support* or *close air support* was actually an objectionable term. The term *support* implied subordination and not integration. In the *Report on Tactical Air Cooperation, Organization, Methods, and Procedures* (Air Force Historical Research Agency

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[AFHRA] 138.4-34), Ninth Air Force leaders gave alternative recommended phrases. Instead of air support they recommended *air cooperation*, *tactical air action*, or *assault*. The significance of these terms is that air leaders did not view close-in attacks against enemy formations as support of friendly ground troops. They saw the action as the point where the two forces, air and land, came together in support of one objective. Coordination and not subordination was effected to limit the potential for friendly casualties and to assist in target acquisition. It is interesting to note that target acquisition was not always ground units assisting air units but at times air units assisting ground units. For the sake of clarity, the author has chosen to use the modern term *close air support* for those missions that were in close proximity to friendly ground forces. The reader should take careful notice, however, of the implied difference between support and cooperation even if it is only a philosophical one.

34. Ninth Air Force, *Daily Mission Logs Ninth Air Force 1-30 June 1944* (Maxwell Air Force Base [AFB], Ala.: AFHRA), file no. 533.371.

35. Ninth Air Force, *Report on Tactical Air Cooperation, Organization, Methods, and Procedures, Headquarters Ninth Air Force* (Maxwell AFB, Ala.: AFHRA), file no. 138.4-34, 300-2.

36. Ninth Air Force, *Report on Tactical Air Cooperation, Organization, Methods, and Procedures, Headquarters Ninth Air Force* (Maxwell AFB, Ala.: AFHRA), file no. 138.4-34, 5.

37. Harrison, 325.

38. *Ibid.*, 336.

39. *Ibid.*, 330.

40. *Ibid.*, 329-30.

41. Kershaw, 175.

42. Harrison, 333.

43. Ninth Air Force, *Daily Mission Logs 1-30 June 1944, Ninth Air Force*, 7 June.

44. Harrison, 350-51.

45. Craven and Cate, 197.

46. Harrison, 334-35.

47. *Ibid.*, 360.

48. *Ibid.*, 349.

49. Ninth Air Force, *Situation Report 120130 hrs* (Maxwell AFB, Ala.: AFHRA), file no. 533.4501-11, 5 June-4 August 1944, 12 June.

50. Ninth Air Force, *Mission Folder 12 June 1944* (Maxwell AFB, Ala.: AFHRA), file no. 533.333, 12 June, Op Ord from Ninth Air Force to IX FTG CMD.

51. *Ibid.*, Op Ord 372.

52. *Ibid.*, daily flying schedule.

53. *Ibid.*, Offensive Summary, 12 June, 0000-1100 hrs.

54. Harrison, 365.

55. *Ibid.*, 377.

56. Army Air Forces Evaluation Board in European Theater of Operations, *The Effectiveness of Third Phase Tactical Air Operations in the European Theater*, Personal collection of Ralph F. Stearley (Maxwell AFB, Ala.: AFHRA), file no. 168.7045-52, 263.

## Chapter 6

### **Conclusions and Implications**

*Battles are won by slaughter and maneuver. The greater the general, the more he contributes to maneuver, the less he demands in slaughter.*

—Winston S. Churchill

This study set out to determine the extent to which airpower can act as a maneuver force in a theater campaign. To accomplish this task, it was first necessary to determine the essential characteristics of a maneuver force. These were derived from a review of military history from ancient Greece to the American Civil War. The following functions of a maneuver force were derived from this survey. The maneuver force

- comes into direct contact with an enemy force and shocks it;
- exerts influence over enemy units and terrain;
- denies or compels battle; and
- gains and exploits a position of advantage, forcing the adversary to react or be attacked at a disadvantage.

### **Conclusions**

These four performance characteristics were then used as a framework to examine airpower's role in three theater campaigns: the 1973 Yom Kippur War, the 1972 Easter offensive, and the 1944 Normandy campaign. The three cases were chosen to test the assertion that airpower's ability to act as a maneuver force is not an inherent capability but rather a function of unique conditions evident in the Persian Gulf War. These unique conditions were a stationary opponent, a desert environment, and the availability of PGMs. But an analysis of each of the three aforementioned campaigns suggests that airpower can act as a maneuver force.

### **Direct Engagement from the Air**

In all three cases, the typical method for airpower to attack ground targets was to close to contact and engage with direct fire. Airmen found the enemy forces, closed with, and brought them under direct fire. This was true for F-4s using laser-guided bombs in the Sinai and true for P-47s using 50-caliber machine guns in France. Rarely did aircraft drop or employ ordnance indirectly. The aircrews had visual contact with the targets. Direct engagement was the primary means of employment for airpower whether attacking LOCs in the rear area or tanks at the front.

### **Aerial Zone of Influence—Redefining the Close Battle**

The capability to engage an enemy ground force directly allowed airpower to extend a zone of influence over the theater. Again, each case supports this claim. The North Vietnamese and Egyptians both recognized their opponents' zone of influence. The North Vietnamese attempted to mitigate the zone of influence by using active and passive defenses as well as exploiting political sanctuaries. The Egyptians sought to deny airpower's zone of influence by using SAMs to create an impenetrable flank. With the exception of Rommel, the Germans defending France were not as convinced of airpower's zone of influence. By the Allied breakout from Normandy, however, even the skeptics were forced to concede that all military actions had to take airpower into consideration when under an aerial zone of influence.

### **Compelling and Denying Battle— Airpower's Strength and Weakness**

The ability to compel or deny battle demonstrates both airpower's strength and weakness as a maneuver force. The ability to compel battle is certainly one of airpower's greatest strengths. The superior mobility of the aircraft forces an enemy to accept battle. In each of the three cases examined, airpower's mobility allowed those who possessed it to conduct offensive actions that forced an adversary to react. Those at the receiving end of airpower could not avoid the attack. At

best, they could reduce airpower's effectiveness through a combination of active and passive measures. While airpower's ability to compel battle is a strength, the ability to deny battle is its weakness. In the three cases reviewed, airpower never prevented the enemy ground forces from closing with friendly ground forces. This seems to imply that airpower is incapable of denying battle to the enemy. However, airpower's ability to deny battle temporarily gave friendly ground forces time to accomplish their missions and frustrated enemy designs. Airpower thus helped wrest the initiative from the enemy.

#### **Position of Advantage—The Existence of the Vertical Flank**

The position of airpower above the theater of operations confers upon it a distinct advantage. That advantageous position may be thought of as a vertical flank that can be turned and exploited. In all three cases, the side that turned the vertical flank emerged victorious. Conversely, the North Vietnamese, Arabs, and Germans each had an exposed vertical flank that placed them at a significant disadvantage and subjected them to sustained fire from the air. The North Vietnamese and the German commanders attempted to mitigate the damage from air but were unable to do so. The Egyptians on the other hand were painfully aware of their vulnerability from the air and went to great lengths to protect this exposed flank. They were largely successful until they unwisely chose to emerge from their air defense umbrella. Thus, all three cases demonstrated the existence and significance of the exposed vertical flank.

#### **Synthesis**

Synthesis suggests that airpower can demonstrate maneuver force performance characteristics in a theater campaign. This ability does not appear to be tied to any unique conditions as is suggested by critics of airpower in the Persian Gulf War. In each case, airpower was able to function as a maneuver force regardless of the enemy, environment, or advanced weaponry. This function implies that airpower is inherently a maneuver force. Consequently, airpower can function as a



maneuver force in a theater campaign generally to the same extent that ground power can only partially limited by its ability to deny battle to ground forces only temporarily.

### **Implications**

If airpower is inherently a maneuver force, certain implications follow. Analysis of the three cases and the historical derivation suggests that at the operational level, air and ground forces perform many of the same functions. While airpower is unique in its position, it does not produce unique effects. The four performance characteristics of traditional maneuver forces are the same for air as for ground forces in the theater campaign. There are, however, some distinctions that remain. Airpower possesses a mobility far superior to ground forces and therefore has a better ability to compel battle. Conversely, ground forces have a better ability to deny battle to other ground forces and conduct a static defense. Ground forces on the defense form a static barrier that must be penetrated. Air forces defending against ground forces do not present such a barrier. While airpower can most certainly damage any attacking ground force, its ability to stop an opposing army prior to its reaching its territorial objective depends on how many casualties it can inflict before the enemy reaches the objective.

Another implication of this study is that conceiving of airpower as a maneuver force allows it to be used more effectively both as an independent force and in conjunction with ground forces to achieve campaign objectives. Independently, air maneuver forces can turn the vertical flank and exploit that position of advantage, thus allowing for attacks on an enemy throughout a theater. It can also provide rapid access to friendly ground forces. When used in conjunction with ground forces, the strengths of both are complimentary. On the operational defensive, airpower can use its superior mobility to compel battle and thereby disrupt an attacking enemy while ground units prepare for a territorial defense. On the operational offense, air and ground maneuver units can place the enemy on the horns of a dilemma

and exploit each other's successes. In a sense, the overall implication of this analysis is that airpower is a maneuver force that can, and quite possibly should, be considered as the cavalry of a modern combined arms force on an operational scale.

### **Final Thoughts**

The consideration of airpower as a maneuver force in the theater campaign fundamentally changes the battle area. Traditionally, the anatomical structure of maneuver forces has consisted of fronts, flanks, and rears.<sup>1</sup> Ground forces maneuver against an enemy's military anatomical structure to take and hold a position of advantage. If airpower is a maneuver force, how does this apply? Airpower adds a flank in the third dimension making the vertical battle important to the horizontal battle. It, therefore, stands to reason that in such cases the "air" above the theater is maneuver space to be taken and exploited. Combat in this maneuver space takes two forms, denial by surface forces or seizure by air forces. In the overall construct, ground forces can take ground but cannot take air and air forces can take air but cannot take ground. To campaign properly in such an environment, it is necessary to establish seamless cooperation between air and ground as maneuver forces. The theater is three-dimensional and must, therefore, be fought in three dimensions. A commander should no sooner expose the vertical flank than he should a horizontal flank. Equally true, a commander should seek to gain a position of advantage by turning an enemy's vertical flank. The advantage gained must then be exploited to either destroy or dislodge the enemy. In the final analysis, conceiving of airpower as a maneuver force gives a theater commander many more options than he would have if he conceived of it solely as a fire support force. And wars are won by expanding one's options.

### **Notes**

1. Thomas E. Griess, ed., *Definitions and Doctrine of the Military Art* (Wayne, N.J.: Avery Publishing Group, 1985), 11.



## Bibliography

- Adan, Avraham. *On the Banks of the Suez: An Israeli General's Personal Account of the Yom Kippur War*. Novato, Calif.: Presidio, 1980.
- ADI(k) Report No. 333/1944. *The Effect of Bombing*. Maxwell Air Force Base (AFB), Ala.: United States Air Force Historical Research Agency (USAFHRA), 533-4501-9.
- Air Force Doctrine Document (AFDD) 1. *Air Force Basic Doctrine*, September 1997.
- AFDD 2-1.3. *Counterland*, August 1999.
- Aker, Frank. *October 1973: The Arab-Israeli War*. Hamden, Conn.: Archon Books, 1985.
- Allen, Peter. *The Yom Kippur War*. New York: Scribner, 1982.
- Ambrose, Stephen E. *D-Day, June 6, 1944: The Climactic Battle of World War II*. New York: Simon and Schuster, 1994.
- Andradé, Dale. *Trial by Fire: The 1972 Easter Offensive, America's Last Vietnam Battle*. New York: Hippocrene Books, 1994.
- Army Air Forces Evaluation Board in European Theater of Operations. *Tactics and Techniques Developed by the United States Tactical Air Commands in the European Theatre of Operations*. Maxwell AFB, Ala.: USAFHRA, 138.4-33.
- . *Tactics and Techniques Developed by VIII Fighter Command*. Maxwell AFB, Ala.: USAFHRA, 138.4-33A, 27 October 1944.
- Asher, Jerry, and Eric Hammel. *Duel for the Golan: The 100 Hour Battle that Saved Israel*. New York: William Morrow and Co., 1987.
- Ballard, Jack S. *The Development and Employment of Fixed-Wing Gunships 1962-1972*, United States Air Force in Southeast Asia series. Washington, D.C.: Office of Air Force History, 1982.
- Bekker, Cajus. *The Luftwaffe War Diaries*. Edited and translated by Frank Ziegler. Garden City, N.Y.: Doubleday, 1968.
- Brant, Maj Bruce A. *Battlefield Air Interdiction in the 1973 Middle East War and Its Significance to NATO Air*

- Operations*. Fort Leavenworth, Kans.: US Army Command and General Staff College, 1986.
- Chandler, David G. *The Art of Warfare in the Age of Marlborough*. New York: Sarpedon, 1997.
- Chandler, David H. *The Campaigns of Napoleon*. New York: Macmillan, 1966.
- Church, Maj Jimmy H., and Maj Robert T. Osterthaler. *The Battle for Air Superiority during the 1973 Arab-Israeli War*. Quantico, Va.: Marine Corps Command and Staff College, 1983.
- Coddington, Edwin B. *The Gettysburg Campaign: A Study in Command*. New York: Scribner's, 1997.
- Cooling, Benjamin Franklin, ed. *Case Studies in the Development of Close Air Support*. Washington, D.C.: Office of Air Force History, 1990.
- Craven, Wesley Frank, and James Lea Cate, eds. *The Army Air Forces in World War II*. Vol. 3, *Europe: Argument to V-E Day, January 1944 to May 1945*. 1951. New imprint, Washington, D.C.: Office of Air Force History, 1983.
- Davis, Richard G. *Carl A. Spaatz and the Air War in Europe*. Washington, D.C.: Center for Air Force History, 1993.
- Delbrück, Hans. *The Dawn of Modern Warfare*. Vol. 4, *History of the Art of War*. Translated by Walter J. Renfroe Jr. Lincoln, Nebr.: University of Nebraska Press, 1990.
- Effectiveness of Third Phase Tactical Air Operations in the European Theater*. Maxwell AFB, Ala.: USAFHRA, 168.7045-52.
- El-Gamasy, Mohamed Abdel Ghani. *The October War: Memoirs of Field Marshal El-Gamasy of Egypt*. Translated by Gillian Potter et al. Cairo, Egypt: American University in Cairo Press, 1993.
- Entwistle, Maj Thomas D. *Lessons from Israeli Battlefield Air Interdiction during the Battle for Golan, October 1973*. Fort Leavenworth, Kans.: US Army Command and General Staff College, 1988.
- Field Manual (FM) 100-20. *Command and Employment of Air Power*, July 1943.
- FM 110-5. *Operations*, June 1993.

- Gawrych, Dr. George W. *The 1973 Arab-Israeli War: The Albatross of Decisive Victory*. Leavenworth Paper no. 21. Fort Leavenworth, Kans.: Combat Studies Institute, 1996.
- George, Alexander. "Case Studies and Theory Development: The Method of Structured, Focused Comparison." In *Diplomacy*. Edited by Paul G. Lauren. New York: Free Press, 1979.
- Gilster, Herman L. *The Air War in Southeast Asia: Case Studies of Selected Campaigns*. Maxwell AFB, Ala.: Air University Press, 1993.
- Griess, Thomas E., ed. *Definitions and Doctrine of the Military Art*. Wayne, N.J.: Avery Publishing Group, 1985.
- Guderian, Heinz. *Panzer Leader*. Translated by Constantine Fitzgibbon. New York: Ballantine Books, 1957.
- Hall, Johnnie H. "Airpower Effectiveness against the Tank." Maxwell AFB, Ala.: Air Command and Staff College, April 1976.
- Hall, R. Cargill, ed. *Case Studies in Strategic Bombardment*. Washington, D.C.: Air Force History and Museums Program, 1998.
- Hansell, Haywood S. *The Air Plan That Defeated Hitler*. Atlanta: Higgins-McArthur/Longino & Porter, 1972.
- Hanson, Victor. *The Western Way of War*. New York: Oxford University Press, 1989.
- Harrison, Gordon A. *Cross-Channel Attack*. Washington, D.C.: Office of the Chief of Military History Department of the Army, 1951.
- Hastings, Max. *Overlord: D-Day and the Battle for Normandy, 1944*. New York: Simon and Schuster, 1984.
- Headquarters, Army Air Forces Office of Assistant Chief of Air Staff. *Condensed Analysis of the Ninth Air Force in the European Theater of Operations: An Analytical Study of the Operating Procedures and Functional Organization of Tactical Air Power as Developed by the Ninth Air Force in the War of Western Europe*. Washington, D.C.: Headquarters, Army Air Forces Office of Assistant Chief of Air Staff, 1946.
- Headquarters Pacific Air Force (PACAF). *A Project Corona Harvest Study, USAF Operations in Defense of South Vietnam, 1 July 1971-30 June 1972*. Headquarters PACAF, 1973.

- Herzog, Chaim. *The Arab-Israeli Wars: War and Peace in the Middle East*. New York: Random House, 1982.
- . *The War of Atonement, October 1973*. Boston: Little, Brown and Co., 1975.
- Horner, Lt Col C. A. *Comments and Observations Made By Major General Benjamin Peled, Commander Israeli Air Force*. Maxwell AFB, Ala.: AFHRA, 1974, K143.505-5 73/10/29-73/12/11 v 2.
- Joint Publication 3-0. *Doctrine for Joint Operations*, February 1995.
- Jones, Archer. *The Art of War in the Western World*. Urbana, Ill.: University of Illinois Press, 1987.
- Kershaw, Robert J. *D-day: Piercing the Atlantic Wall*. Annapolis: Naval Institute Press, 1994.
- Lavalle, A. J. C. *Airpower and the 1972 Spring Invasion*. Vol. 2 monograph 3, USAF Southeast Asia Monograph series. Washington D.C.: Office of Air Force History, 1985.
- Liebchen, Capt Peter A. W. *Project CHECO Kontum: Battle for the Central Highlands 30 March–10 June 1972*. Headquarters PACAF, 1972.
- Livy, Brian. *The War with Hannibal*, Books XXI-XXX of *The History of Rome from its Foundation*. Translated by Aubrey De Selincourt, edited by Betty Radice. London: Penguin Books, 1965.
- Luttwak, Edward N. *The Grand Strategy of the Roman Empire: From the First Century A.D. to the Third*. Baltimore: Johns Hopkins University Press, 1976.
- Mann, Capt David K. *Project CHECO 1972 Invasion of Military Region I: Fall of Quang Tri and Defense of Hue*. Headquarters PACAF, 1973.
- Mark, Eduard M. *Aerial Interdiction: Air Power and the Land Battle in Three American Wars*. Washington, D.C.: Center for Air Force History, 1994.
- McManus, John C. *Deadly Sky: The American Combat Airman in World War II*. Novato, Calif.: Presidio, 2000.
- Movement of German Divisions into Lodgment Area: Overlord, D to D + 50*. Maxwell AFB, Ala.: USAFHRA, 3 October 1944, 142.0422-14.

- Murray, Williamson. *Luftwaffe*. Baltimore: Nautical and Aviation Publishing Co., 1985.
- Ninth Air Force. *Daily Mission Logs Ninth Air Force 1-30 June 1944*. Maxwell AFB, Ala.: USAFHRA, 533.371.
- . *Memorandum on Direct Air Support Headquarters Ninth Air Force*. Maxwell AFB, Ala.: USAFHRA, 533-4501-8, February-June 1944.
- . *Mission Folder 12 June 1944*. Maxwell AFB, Ala.: USAFHRA 533.333.
- . *Report on Tactical Air Cooperation, Organization, Methods, and Procedures, Headquarters Ninth Air Force*. Maxwell AFB, Ala.: USAFHRA, 138.4-34.
- . *Situation Report 120130 hrs*. Maxwell AFB, Ala.: USAFHRA 533.4501-11, 5 June-4 August 1944.
- Nofi, Albert A. *The Gettysburg Campaign, June-July 1863*. 3d ed. Conshocken, Pa.: Combined Books, 1997.
- Nosworthy, Brent. *The Anatomy of Victory: Battle Tactics, 1690-1763*. New York: Hippocrene Books, 1989.
- Palit, Maj Gen D. K. *Return to Sinai: The Arab Offensive, October 1973*. Dehra Dun, India: Palit & Palit Publishers, 1974.
- Porter, Melvin F. *Project CHECO Linebacker: Overview of the First 120 Days*. Headquarters PACAF, 1973.
- . *Project CHECO Southeast Asia Report, Proud Deep Alpha*. Headquarters PACAF, 1973.
- Preston, Richard A., Alex Roland, and S. F. Wise. *Men in Arms: A History of Warfare and Its Interrelationships with Western Society*. Fort Worth, Tex.: Holt, Rinehart and Winston, 1991.
- Pritchett, W. Kendrick. *The Greek State at War*. Vol. 4. Berkeley, Calif.: University of California Press, 1985.
- Report on the Activities of 1st Air Combat Control Squadron, Amphibious Aboard U.S.S. Ancon in Operation Neptune, 24 June 1944*. Maxwell AFB, Ala.: USAFHRA, 519.4511, 3 June 1944.
- Ringenbach, Maj Paul T. *Project CHECO, The Battle for An Loc 5 April-26 June 1972*. Headquarters PACAF, 1973.
- Rommel, Erwin, and B. H. Liddell Hart, eds. *The Rommel Papers*. New York: Harcourt Brace Jovanovich, 1953.



- Rust, Kenn C. *The 9th Air Force in WWII*. Fallbrook, Calif.: Aero Publishers, 1970.
- Shazly, Lt Gen Saad El. *The Crossing of the Suez*. San Francisco: American Mideast Research, 1980.
- Strachan, Hew. *European Armies and the Conduct of War*. London: Allen & Unwin, 1985.
- Thompson, Sir Robert. *Peace Is Not at Hand*. New York: McKay, 1974.
- Truong, Ngo Quang. *The Easter Offensive of 1972*. Indochina Refugee Authored Monograph Program. Washington, D.C.: United States Army Center of Military History, 1977.
- Tucker, Glenn. *High Tide at Gettysburg: The Campaign in Pennsylvania*. Dayton, Ohio: Morningside Bookshop Press, 1983.
- The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies*. Series 1, vol. 27, pts. 1, 2, and 3. Washington, D.C.: Government Printing Office, 1889.
- Willbanks, Lt Col James H., US Army, Retired. *Thiet Giap! The Battle of An Loc, April 1972*. Fort Leavenworth, Kans.: Combat Studies Institute, US Army Command and General Staff College, 1993.
- Williams, Louis, ed. *Military Aspects of the Israeli-Arab Conflict*. Tel Aviv: University Publishing Projects, 1975.

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